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SITE NAME	**SAUGET AREA 1**
DOC ID #	**154363**
DOCUMENT VARIATION	**_X_ COLOR OR __ RESOLUTION**
PRP	
PHASE	**SAN - SAMPLING AND ANALYSIS**
OPERABLE UNITS	
PHASE (AR DOCUMENTS ONLY)	___ Remedial ___ Removal ___ Deletion Docket ___ ___ Original ___ Update #___ Volume __of __

COMMENT(S)

COLOR PHOTOGRAPHS
FIGURES: 3.25.4.4 - 3.25.4.3; 3.28.4.32;-3.30.4.3.1

1 6 1 3 2 3

FIELD SAMPLING REPORT

Soil, Ground Water, Surface Water, Sediment, and Air Sampling Field Sampling Report Sauget Area 1 – Volume 6 of 9

Remediation Technology Group
Solutia Inc.
St. Louis, Missouri

September 2000

O'BRIEN & GERE ENGINEERS, INC.

Section 3.22

3.22. Air Sampling

3.22.1. Rationale/Design

Ambient air sampling was conducted to determine the tendency of site constituents to enter the atmosphere and local wind patterns. Air sampling data will be used in the HHRA (construction/utility worker and residential exposure scenarios). The HHRA Work Plan is in Volume 1B of the SSP.

Volatile Organics – Twenty-four-hour cumulative duration sorbent tube samples were collected over a one-day period using TO-1 (Appendix G of the 1999 FSP) sampling protocols in order to evaluate the tendency of site constituents to enter the atmosphere and local wind patterns. Two upwind and two downwind sorbent tube samplers were installed around Site G, and three upwind and six downwind sorbent tube samplers were installed at Sites H, I, and L. Sampling locations were selected in the field with the concurrence of USEPA Region V or its designee.

Number of Volatile Organic Air Samples	13

Analyses:

VOCs	USEPA Method TO-1

Semivolatile Organics, PCBs, and Dioxins – Twenty-four-hour cumulative duration polyurethane foam (PUF) samples were collected over a one-day period using TO-13, TO-4, and TO-9 (Appendix G of the 1999 FSP) sampling protocols in order to evaluate the tendency of site constituents to enter the atmosphere and local wind patterns. Two upwind and two downwind PUF samplers were installed around Site G, and three upwind and six downwind PUF samplers were installed at Sites H, I, and L. Sampling locations were selected in the field with the concurrence of USEPA Region V or its designee.

Number of Semivolatile Organic Air Samples	13

Analyses:

Dioxin	USEPA Method TO-9
PCBs	USEPA Method TO-4
SVOCs	USEPA Method TO-13

Metals – Twenty-four-hour cumulative duration PM 2.5 samples were collected over a one-day period in order to evaluate the tendency of site constituents to enter the atmosphere and local wind patterns. Two upwind and two downwind PM 2.5 samplers were installed around Site G, and three upwind and six downwind PM 2.5 samplers were installed at Sites H, I, and L. Sampling locations were selected in the field with the concurrence of USEPA Region V or its designee.

Number of Metals Air Samples	13

Analyses:

Metals	USEPA Method 6010B

Degree of Hazard – Organic and inorganic constituents detected will be compiled into a data base. Frequency of detection, average, maximum, minimum, and 95% confidence interval concentrations will be compiled for each detected constituent, along with information on degree of hazard. This information will be used in the HHRA. The HHRA Work Plan is in Volume 1B of the SSP.

Ambient air sample collection is required to measure airborne levels of VOCs, SVOCs, PCBs, dioxin, and metals that may be evolving from the site. An air sample collection and analytical test method was required to measure airborne constituent levels over a 24-hour time period. A 24-hour sample duration was required to average the air emission differences that may occur from the daytime to nighttime cycle from on-site and off-site conditions and activities. Also, air sample collection locations were positioned on the site to collect upwind and downwind samples for differentiation of constituents originating from the surrounding area and those originating from the site. The sample protocol collected site samples over a one-day time period on a very warm, dry day.

The level of detection for SVOCs required by USEPA Region V needs to consider sensitivity and selectivity to analyze complex samples. Based on this need, the analytical method of choice is gas chromatography coupled with mass spectrometry (GC/MS) for detection. Based on the GC/MS analytical method and its sensitivity level, the air sample volume needed to exceed 325 standard cubic feet (scf) to collect a quantity of SVOCs that meet the level of detection required by USEPA Region V.

The sample collection method to meet the above requirements for SVOCs measurement is USEPA Method TO-13 as identified in *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air* (June 1988). This method uses a Graseby/General Metal Works, Inc. high-volume air sampling unit for sample collection. Sample collection consists of drawing an ambient air sample at a high-volume flow rate through a PUF collection media over a 24-hour time period. The samples were submitted for analysis of the TO-13 list of SVOCs.

The sample collection method for VOC measurement is USEPA Method TO-1. The sampling method for PCB measurement was USEPA Method TO-4. The sampling method for dioxin measurement was USEPA Method TO-9. The sampling method for metals measurement was PM 2.5.

3.22.2. QA/QC Samples

A field blank (or equipment blank) was submitted to the laboratory with the investigative samples and analyzed for the same parameters as the investigative samples. The minimum required was 1 per 10, or fraction of 10, environmental samples collected. A trip blank for VOC analysis was included with each sample cooler shipped.

A deviation was implemented for types of QA/QC samples taken and is included in Section 3.22.4.1.

3.22.3. Field Procedures

Sample collection consists of placing sorbent tube samplers, PUF samplers, and PM 2.5 samplers at upwind and downwind locations for Sites G, H, I, and L. Sample positioning was located in an unobstructed area at least two meters from any obstacle to air flow. Sample locations were selected in the field with the concurrence of the USEPA Region V or its designee. Since no local power supply was readily available at the sites, gasoline- or diesel-powered electrical generators to supply electricity for the samplers were positioned at downwind locations from the sample collection positions. Wind direction and velocity readings were obtained and recorded in the field log book.

Sample collection protocols followed instruction identified in Methods TO-1, TO-4, TO-9, and TO-13 for sample preparation, calibration, collection, laboratory preparation and shipment, and calculations. Deviation for the type of sampler used is in Section 3.22.4.1. Sample calibrations were recorded in the field log books. During the 24-hour collection period, the samplers were checked every five to six hours to ensure proper operation. At those times, flow readings of the pumping units at the locations were recorded in the field log book. The calibration data, weather data, and flow rate data are summarized in tables in Section 3.22.4.2.

3.22.4. Documentation

Deviations to the QA/QC samples and the field procedure are included in Section 3.22.4.1. Field logs generated are included in Record Book Nos. 3 and 5 (Appendix D). Figure 3 depicts locations of air sampling units. Air sampling report parameters are included in Section 3.22.4.2. Chain-of-custody forms are included in Section 3.22.4.3.

Documentation for this task continues on the next page.

3.22.4.1. Deviation Logs

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION: Al Cook / R. Neimeier - OBrien & Gere DATE 8/26/99

HEALTH & SAFETY APPROVAL REQUIRED: YES: ______ NO: X

DEVIATION APPROVAL ______

PROJECT NAME Solutia Sauget Area I PROJECT LOCATION Air Sampling

WEATHER NA PRECIPITATION NA TEMPERATURE NA

NUMBER OF HOURS WORKED NA NUMBER OF EMPLOYEES NA

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT; TIME; MANPOWER; ETC.):
7. REMARKS:
8. MAIN OFFICE COMMENTS:

1) Air Sampling Task FSP Section 5.22

All major suppliers of PM2.5 samplers have been contacted concerning supplying PM2.5 samplers for project. However, only 10 of 13 samplers were available.

3) Not enough PM2.5 samplers available from suppliers.

4) Using a Partisol PM10 base w/ a PM2.5 head to obtain additional PM2.5 samples.

5) Same as 4)

6) None @ this time

7) - Sampling will be done @ same flow rate (16.7 L/min) no matter which sampling base is used. OBG's feeling is that from a practical application this should not be a concern. But unknown how EPA will feel.

- Suppliers are reluctant to purchase entirely new PM2.5 samplers since method is under review by EPA.

- See Attached Discussion.

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

NATURE OF PREPARER

285A-1

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION: OBG - Alan J. Cork/Rob Neimeier

DATE 8/31/99

HEALTH & SAFETY APPROVAL REQUIRED: YES: ________ NO: X

DEVIATION APPROVAL: Solutia ________ USEPA Region V Rep ________

PROJECT NAME Solutia Inc Sauget PROJECT LOCATION Sauget Area 1 Air Sampling

WEATHER NA PRECIPITATION NA TEMPERATURE NA

NUMBER OF HOURS WORKED NA NUMBER OF EMPLOYEES NA

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT; TIME; MANPOWER; ETC.):
7. REMARKS:
8. MAIN OFFICE COMMENTS:

1) Air Sampling Section 5.22 FSP, Table 24 in FSP, Table 3 of QAPP

QAPP calls out field duplicates @ 1 in 10 interval & MS/MSDs @ 1 in 20 interval for all air sampling parameters. While FSP does not mention the need for field duplicates or MS/MSDs in Air Samples

3) QAPP information is incorrect and not consistent w/ TO methods. Information in FSP is correct in Table 24

4) Table 24 in FSP sampling will be implemented - # & parameters

5) NONE

6) NONE

7) QAPP information is standard information for soil/water/groundwater/sediment samples. TO Methods do not call for field dups of MS/MSDs

8) NONE

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Alan J. Cork

SIGNATURE OF PREPARER

285A-2

3.22.4.2. Ambient Air Sampling – September 9 Through 11, 1999

Surface weather observations during ambient air sampling from 9/9/99 through 9/10/99.

YEAR=1999

Lat: 38.75 Long: 90.38 Elev: 568 ft *Name: ST.Louis, WSCMO Airport, MO*

hr = C.S.T. stn mo/dy:hr	Air Temp (°F)	DewPt Temp (°F)	WetBlb Temp (°F)	RH (%)	Press (mb)	Altimeter (in)	Wind Speed (mph)	Wind Dir (deg)
STL 09/08:00	73	57	63	57	-99	29.83	7	100
STL 09/08:01	73	57	63	57	-99	29.82	5	100
STL 09/08:02	73	59	64	61	-99	29.82	3	100
STL 09/08:03	75	59	65	57	-99	29.82	0	0
STL 09/08:04	73	60	65	63	-99	29.82	3	230
STL 09/08:05	73	60	65	63	-99	29.81	3	250
STL 09/08:06	73	62	66	68	-99	29.84	7	250
STL 09/08:07	73	62	66	68	1010	29.85	12	260
STL 09/08:08	75	62	66	63	1010	29.87	13	260
STL 09/08:09	78	62	67	57	-99	29.88	12	310
STL 09/08:10	78	62	67	57	-99	29.9	16	310
STL 09/08:11	80	64	69	57	-99	29.89	12	310
STL 09/08:12	80	64	69	57	-99	29.92	8	320
STL 09/08:13	80	64	69	57	-99	29.92	9	320
STL 09/08:14	80	64	69	57	-99	29.9	12	330
STL 09/08:15	82	59	67	45	-99	29.89	10	350
STL 09/08:16	82	53	64	36	-99	29.89	8	340
STL 09/08:17	82	53	64	36	-99	29.88	8	350
STL 09/08:18	78	51	62	38	-99	29.88	8	330
STL 09/08:19	75	48	59	38	-99	29.9	7	320
STL 09/08:20	71	48	58	43	-99	29.94	6	330
STL 09/08:21	68	50	58	52	-99	29.96	5	330
STL 09/08:22	66	48	56	52	-99	29.97	3	330
STL 09/08:23	64	50	56	60	-99	29.98	3	290
STL 09/09:00	60	50	54	69	-99	29.99	6	300
STL 09/09:01	60	50	54	69	-99	29.99	5	280
STL 09/09:02	60	50	54	69	-99	29.99	3	290
STL 09/09:03	57	48	52	71	-99	30	7	320
STL 09/09:04	57	50	53	77	-99	30.01	9	300
STL 09/09:05	55	48	51	77	-99	30.01	9	300
STL 09/09:06	55	48	51	77	-99	30.02	6	290
STL 09/09:07	62	48	54	60	-99	30.03	5	280
STL 09/09:08	64	50	56	60	-99	30.03	6	290
STL 09/09:09	71	48	58	43	-99	30.03	6	300
STL 09/09:10	75	46	58	35	-99	30.03	9	300
STL 09/09:11	78	44	59	29	-99	30.01	13	280
STL 09/09:12	78	44	59	29	-99	29.99	10	330
STL 09/09:13	84	62	69	47	-99	29.89	-99	-99
STL 09/09:14	82	42	60	24	-99	29.94	22	320
STL 09/09:15	82	42	60	24	-99	29.92	14	280
STL 09/09:16	82	42	60	24	-99	29.9	13	310
STL 09/09:17	82	42	60	24	-99	29.89	17	280
STL 09/09:18	78	42	58	27	-99	29.89	9	300

hr = C.S.T. stn mo/dy:hr	Air Temp (°F)	DewPt Temp (°F)	WetBlb Temp (°F)	RH (%)	Press (mb)	Altimeter (in)	Wind Speed (mph)	Wind Dir (deg)
STL 09/09:19	73	42	56	32	-99	29.9	8	300
STL 09/09:20	71	44	56	37	-99	29.91	6	300
STL 09/09:21	66	46	55	48	-99	29.93	5	330
STL 09/09:22	68	44	55	41	-99	29.95	7	30
STL 09/09:23	66	44	54	44	-99	29.97	7	50
STL 09/10:00	64	44	53	48	-99	29.99	5	50
STL 09/10:01	60	44	51	55	-99	29.99	3	110
STL 09/10:02	57	44	50	61	-99	29.98	0	0
STL 09/10:03	57	44	50	61	-99	29.97	5	130
STL 09/10:04	57	44	50	61	-99	29.98	0	0
STL 09/10:05	59	44	51	57	-99	29.98	0	0
STL 09/10:06	60	44	51	55	-99	29.98	0	0
STL 09/10:07	62	44	52	51	-99	29.98	-99	-99
STL 09/10:08	66	44	54	44	-99	29.99	8	190
STL 09/10:09	71	44	56	37	-99	29.99	-99	-99
STL 09/10:10	73	44	57	35	1015	29.99	-99	-99
STL 09/10:11	78	44	59	29	-99	29.97	-99	-99
STL 09/10:12	80	46	60	29	-99	29.95	-99	-99
STL 09/10:13	84	48	63	28	-99	29.92	9	250
STL 09/10:14	86	48	63	26	-99	29.9	10	240
STL 09/10:15	86	48	63	26	-99	29.87	9	230
STL 09/10:16	86	48	63	26	-99	29.85	6	310
STL 09/10:17	84	46	62	26	-99	29.85	5	270
STL 09/10:18	82	51	63	33	-99	29.85	0	0
STL 09/10:19	80	50	62	34	-99	29.86	10	130
STL 09/10:20	80	51	62	36	-99	29.87	9	110
STL 09/10:21	75	53	62	46	-99	29.88	0	0
STL 09/10:22	73	53	61	49	-99	29.87	0	0
STL 09/10:23	69	51	58	52	-99	29.88	0	0
STL 09/11:00	69	53	59	56	-99	29.89	0	0
STL 09/11:01	68	53	59	58	-99	29.9	3	240
STL 09/11:02	68	53	59	58	-99	29.9	3	240
STL 09/11:03	64	53	57	67	-99	29.91	5	230
STL 09/11:04	69	53	59	56	-99	29.92	3	220
STL 09/11:05	69	55	60	60	-99	29.93	0	0
STL 09/11:06	69	55	60	60	-99	29.94	0	0
STL 09/11:07	69	55	60	60	1014	29.96	7	230
STL 09/11:08	75	57	64	53	-99	29.97	7	230
STL 09/11:09	75	60	65	59	1015	29.99	9	240
STL 09/11:10	75	60	65	59	-99	30.01	12	240
STL 09/11:11	82	60	68	46	1015	30.01	15	240
STL 09/11:12	84	60	68	43	-99	30	18	260
STL 09/11:13	84	59	68	42	-99	29.99	15	230
STL 09/11:14	87	53	66	30	-99	29.98	22	250
STL 09/11:15	84	53	65	34	-99	29.97	12	260
STL 09/11:16	82	53	64	36	-99	29.96	10	200
STL 09/11:17	82	53	64	36	-99	29.95	9	180
STL 09/11:18	80	55	64	41	-99	29.96	12	170
STL 09/11:19	78	55	64	44	-99	29.97	12	180

hr = C.S.T. stn mo/dy:hr	Air Temp (°F)	DewPt Temp (°F)	WetBlb Temp (°F)	RH (%)	Press (mb)	Altimeter (in)	Wind Speed (mph)	Wind Dir (deg)
STL 09/11:20	77	59	65	53	-99	29.98	10	170
STL 09/11:21	73	59	64	61	-99	29.99	8	180
STL 09/11:22	73	59	64	61	-99	30	8	190
STL 09/11:23	71	57	62	61	-99	29.99	7	190

Note: Wind direction is reported in degrees: 0 = north, 90 = east, 180 = south, 270 = west.
Note: -99 defines missing data.
Note: The data are in Central Standard Time.

TO-1 (volatiles) Sampler Calibration and Flow Rate Calculations

Site Information

Client: Solutia
Location: Sauget, IL
Operators: RMN/DH

287A-4

Location	Pump No.	Pre-cal (mlpm)	Post-cal (mlpm)	Average (mlpm)	Run Start Date	Run Start Time	Run Stop Date	Run Stop Time	Total Minutes Sampled	Volume Sampled (liters)	Volume Sampled (m^3)	Avg Temp (°F)	Avg B.P. (inHg)	Volume Sampled ($stdm^3$)
Site H - DW#1	AC-22/2998	4.9	7.3	6.1	9/9/99	1910	9/10/99	1950	1480	9.0	0.00899	71	29.94	0.00910
Site H - DW#2	AC-27/3212	9.4	11.2	10.3	9/9/99	1845	9/10/99	1925	1480	15.2	0.0152	71	29.94	0.0154
Site H - UP#1	AC-36/3210	6.6	5.7	6.1	9/9/99	1928	9/10/99	2011	1483	9.1	0.00910	71	29.94	0.00921
Site I - DW#1	AC-15A/2849	5.1	3.9	4.5	9/9/99	1801	9/10/99	1824	1463	6.6	0.00661	71	29.94	0.00669
Site I - DW#2	2838	6.9	1.71	4.3	9/9/99	1728	9/10/99	1828	1500	6.5	0.00646	72	29.94	0.00652
Site I - UP#1	AC-25/2871	6.4	5.9	6.1	9/9/99	1819	9/10/99	1855	1476	9.0	0.00905	71	29.94	0.00916
Site G - DW#1	3144	4.8	10.8	7.8	9/10/99	0942	9/11/99	0943	1441	11.3	0.0113	75	29.91	0.0113
Site G - DW#2	AC-20/3222	5.9	5.6	5.7	9/10/99	1004	9/11/99	1004	1440	8.2	0.00824	75	29.91	0.00827
Site G - UP#1	AC-28/3211	6.8	3.6	5.2	9/10/99	1125	9/11/99	1125	1440	7.5	0.00751	76	29.91	0.00752
Site G - UP#2	AC-21/3213	6.2	5.4	5.8	9/10/99	1107	9/11/99	1107	1440	8.4	0.00838	76	29.91	0.00839
Site L - DW#1	AC-12/2842	9.1	11.2	10.1	9/10/99	1018	9/11/99	1018	1440	14.6	0.0146	75	29.91	0.0146
Site L - DW#2	AC-23/2994	7.3	4.0	5.7	9/10/99	1031	9/11/99	1031	1440	8.2	0.00816	75	29.91	0.00819
Site L - UP#1	AC-26/3208	7.2	5.5	6.4	9/10/99	1228	9/11/99	1228	1440	9.2	0.00915	76	29.91	0.00917

Notes:
mlpm = milliliters per minute
m^3 = cubic meters
$stdm^3$ = standard cubic meters

PM2.5 (metals) Sample Volumes

Site Information

Client: Solutia
Location: Sauget, IL

Location	Unit No.	Run Start Date	Run Start Time	Run Stop Date	Run Stop Time	Total Minutes Sampled	Volume Sampled (stdm^3)
Site H - DW#1	4716	9/9/99	1858	9/10/99	1858	1440	24.0
Site H - DW#2	100507	9/9/99	1839	9/10/99	1839	1440	24.083
Site H - UP#1	4717	9/9/99	1920	9/10/99	1920	1440	24.0
Site I - DW#1	4713	9/9/99	1750	9/10/99	1750	1440	24.0
Site I - DW#2	4709	9/9/99	1725	9/10/99	1725	1440	24.0
Site I - UP#1	4711	9/9/99	1815	9/10/99	1815	1440	24.0
Site G - DW#1	4714	9/10/99	938	9/11/99	938	1440	23.53
Site G - DW#2	4712	9/10/99	955	9/11/99	955	1440	23.51
Site G - UP#1	PQ200	9/10/99	1133	9/11/99	1133	1440	23.19
Site G - UP#2	100508	9/10/99	1059	9/11/99	1059	1440	23.47
Site L - DW#1	4710	9/10/99	1017	9/11/99	1017	1440	23.52
Site L - DW#2	4715	9/10/99	1030	9/11/99	1030	1440	23.51
Site L - UP#1	100506	9/10/99	1230	9/11/99	1230	1440	23.997

Notes:
stdm^3 = standard cubic meters

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	RMN		*Magnehelic Serial No.:*	R9901155L9
Temperature (°F):	78		*Sampler No.:*	1
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0099
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.71704
			Qstd Intercept (b):	-0.03242

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (ft^3/min)	Linear Regression	
1	6.97	0.275	70	8.36		
2	6.00	0.255	60	7.74	slope	30.4
3	4.90	0.231	50	7.06	intercept	-0.01
4	4.05	0.210	40	6.32	coor. Coeff	0.9992
5	2.93	0.179	30	5.47		
	sum(x)	1.150	*sum(y)*	34.94		
	sum(x) sq.	0.270	*sum(y) sq*	249		
			sum comb	8.21		
			n	5		
	sum(x)/n	0.230	*sum(y)/n*	6.99		
	sum(x)^2	1.32	*sum(y)^2*	1221		

Note: correlation coefficient should be greater than 0.990.

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	29.85
Pa (BP mm Hg):	758

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	6.20	0.258	1.2	60	7.70	-0.5

Flow rate calculations:

Sampling date: 9/9/99-9/10/99

Location:	Site I, DW#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.214	214	321

m = sampler slope	30.4
b = sampler intercept	-0.01
magn = average magnehelic gage reading (inch H2O)	56
average temperature during run (°F)	71
Tav = average temperature (°K)	344
average barometric pressure during run (in Hg)	29.96
Pav = average pressure (mmHg)	761
run start time	1724
run end time	1824
total run time (minutes)	1500

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JDB		*Magnehelic Serial No.:*	R9903224L37
Temperature (°F):	78		*Sampler No.:*	2
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0101
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.47526
			Qstd Intercept (b):	-0.044390

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.70	0.278	70	8.36		
2	5.70	0.256	60	7.74	slope	29.8
3	4.90	0.238	50	7.06	intercept	0.07
4	3.70	0.207	40	6.32	coor. Coeff	0.9985
5	2.82	0.182	30	5.47		
	sum(x)	1.161	*sum(y)*	34.94		
	sum(x) sq.	0.275	*sum(y) sq*	249		
			sum comb	8.29		
			n	5		
	sum(x)/n	0.232	*sum(y)/n*	6.99		
	sum(x)^2	1.35	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	29.85
Pa (BP mm Hg):	758

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
3	4.80	0.235	-1.5	50	7.03	-0.5

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site H, DW#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.212	212	313

m = sampler slope	29.8
b = sampler intercept	0.07
magn = average magnehelic gage reading (inch H2O)	54
average temperature during run (°F)	72
Tav = average temperature (°K)	345
average barometric pressure during run (in Hg)	29.93
Pav = average pressure (mmHg)	760
run start time (ET 0.44)	1843
run end time (24.91)	1922
total run time (minutes)	1479

PUF Sampler Calibration and Flow Rate Calculations

Site Information

Location:	Sauget, IL	
Date:	9/8/99	
Operator:	AJC	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF

PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990610ML80
Sampler No.:	3

Calibration Orifice

Model No.:	TE-5040A
Serial No.:	0098
Calibration Date:	8/10/99
Qstd Slope (m):	9.57809
Qstd Intercept (b):	-0.030300

Pre-calibration

Run No.	Orifice Flow ("H2O)	Orifice Qstd (m3/min)	Sampler Magn Flow ("H2O)	Sampler Mang Flow (corrected)	Linear Regression	
1	6.85	0.276	70	8.36		
2	6.10	0.261	60	7.74	slope	30.4
3	5.15	0.240	50	7.06	intercept	-0.15
4	4.10	0.214	40	6.32	coor. Coeff	0.9972
5	2.95	0.182	30	5.47		
	sum(x)	1.173	*sum(y)*	34.94		
	sum(x) sq.	0.281	*sum(y) sq*	249		
			sum comb	8.37		
			n	5		
	sum(x)/n	0.235	*sum(y)/n*	6.99		
	sum(x)^2	1.38	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	29.85
Pa (BP mm Hg):	758

Run No.	Orifice Flow ("H2O)	Orifice Qstd (m3/min)	Orifice % difference	Sampler Magn Flow ("H2O)	Sampler Mang Flow (corrected)	Sampler % difference
2	6.30	0.264	1.1	60	7.70	-0.5

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site I, DW#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.222	222	286
m = sampler slope		30.4		
b = sampler intercept		-0.15		
magn = average magnehelic gage reading (inch H2O)		59		
average temperature during run (°F)		73		
Tav = average temperature (°K)		346		
average barometric pressure during run (in Hg)		29.93		
Pav = average pressure (mmHg)		760		
run start time (ET 0.32)		1750		
run end time (ET 21.79)		1820		
total run time (minutes) (ET 21.47)		1288		

PUF Sampler Calibration and Flow Rate Calculations

Site Information		
Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JWP	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF	
PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990615R9
Sampler No.:	4

Calibration Orifice	
Model No.:	TE-5040A
Serial No.:	0099
Calibration Date:	8/10/99
Qstd Slope (m):	9.71704
Qstd Intercept (b):	-0.032420

Pre-calibration

Run No.	Orifice Flow ("H2O)	Orifice Qstd (m3/min)	Sampler Magn Flow ("H2O)	Sampler Mang Flow (corrected)	Linear Regression	
1	6.55	0.266	70	8.36		
2	5.95	0.254	60	7.74	slope	30.0
3	4.95	0.232	50	7.06	intercept	0.19
4	3.95	0.208	40	6.32	coor. Coeff	0.9935
5	2.70	0.172	30	5.47		
	sum(x)	1.132	*sum(y)*	34.94		
	sum(x) sq.	0.262	*sum(y) sq*	249		
			sum comb	8.08		
			n	5		
	sum(x)/n	0.226	*sum(y)/n*	6.99		
	sum(x)^2	1.28	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	29.85
Pa (BP mm Hg):	758

Run No.	Orifice Flow ("H2O)	Orifice Qstd (m3/min)	% difference	Sampler Magn Flow ("H2O)	Sampler Mang Flow (corrected)	% difference
2	5.80	0.250	-1.7	60	7.70	-0.5

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site I, DW#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.217	217	325

m = sampler slope	30.0
b = sampler intercept	0.19
magn = average magnehelic gage reading (inch H2O)	60
average temperature during run (°F)	72
Tav = average temperature (°K)	344.5
average barometric pressure during run (in Hg)	29.95
Pav = average pressure (mmHg)	761
run start time	1726
run end time	1823
total run time (minutes)	1497

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	AJC		*Magnehelic Serial No.:*	R990610TR1
Temperature (°F):	78		*Sampler No.:*	5
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0098
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.57809
			Qstd Intercept (b):	-0.030300

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.95	0.278	70	8.36		
2	6.20	0.263	60	7.74	slope	30.9
3	5.25	0.242	50	7.06	intercept	-0.33
4	4.10	0.214	40	6.32	coor. Coeff	0.9980
5	3.10	0.187	30	5.47		
	sum(x)	1.184	*sum(y)*	34.94		
	sum(x) sq.	0.286	*sum(y) sq*	249		
			sum comb	8.44		
			n	5		
	sum(x)/n	0.237	*sum(y)/n*	6.99		
	sum(x)^2	1.40	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	80
Temperature (°C):	27
Temperature (K):	300
BP (in Hg):	29.86
Pa (BP mm Hg):	758

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	6.00	0.258	-1.9	60	7.72	-0.3

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site I, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.223	223	328

m = sampler slope	30.9
b = sampler intercept	-0.33
magn = average magnehelic gage reading (inch H2O)	57
average temperature during run (°F)	71
Tav = average temperature (°K)	344
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1819
run end time	1854
total run time (minutes)	1475

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JWP		*Magnehelic Serial No.:*	R990615TR24
Temperature (°F):	78		*Sampler No.:*	6
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0098
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.57809
			Qstd Intercept (b):	-0.030300

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	7.00	0.279	70	8.36		
2	6.15	0.262	60	7.74	slope	31.2
3	5.35	0.244	50	7.06	intercept	-0.43
4	4.25	0.218	40	6.32	coor. Coeff	0.9969
5	3.10	0.187	30	5.47		
	sum(x)	1.190	*sum(y)*	34.94		
	sum(x) sq.	0.289	*sum(y) sq*	249		
			sum comb	8.48		
			n	5		
	sum(x)/n	0.238	*sum(y)/n*	6.99		
	sum(x)^2	1.42	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	29.85
Pa (BP mm Hg):	758

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.80	0.253	-3.4	60	7.70	-0.5

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site I, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.224	224	331

m = sampler slope	31.2
b = sampler intercept	-0.43
magn = average magnehelic gage reading (inch H2O)	58
average temperature during run (°F)	72
Tav = average temperature (°K)	344.6
average barometric pressure during run (in Hg)	29.93
Pav = average pressure (mmHg)	760
run start time	1818
run end time	1853
total run time (minutes)	1475

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JWP		*Magnehelic Serial No.:*	R990616ML6
Temperature (°F):	78		*Sampler No.:*	7
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0099
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.71704
			Qstd Intercept (b):	-0.032420

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	7.35	0.282	70	8.36		
2	6.50	0.265	60	7.74	slope	33.1
3	5.50	0.244	50	7.06	intercept	-1.02
4	4.50	0.221	40	6.32	coor. Coeff	0.9997
5	3.50	0.196	30	5.47		
	sum(x)	1.209	*sum(y)*	34.94		
	sum(x) sq.	0.297	*sum(y) sq*	249		
			sum comb	8.60		
			n	5		
	sum(x)/n	0.242	*sum(y)/n*	6.99		
	sum(x)^2	1.46	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	29.85
Pa (BP mm Hg):	758

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	6.30	0.260	-2.0	60	7.70	-0.5

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site I, DW#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.218	218	323

m = sampler slope	33.1
b = sampler intercept	-1.02
magn = average magnehelic gage reading (inch H2O)	52
average temperature during run (°F)	73
Tav = average temperature (°K)	346
average barometric pressure during run (in Hg)	29.93
Pav = average pressure (mmHg)	760
run start time (ET 25.46)	1745
run end time (ET 0.31)	1822
total run time (minutes)	1477

PUF Sampler Calibration and Flow Rate Calculations

Site Information				PUF	
Location:	Sauget, IL			*PUF Model No.:*	TE-1000PUF
Date:	9/8/99			*Blower Model No.:*	TE-1004
Operator:	JWP			*Magnehelic Serial No.:*	R9906151R43
Temperature (°F):		78		*Sampler No.:*	8
Temperature (°C):		26			
Temperature (K):		299			
Elevation (ft):		568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):		29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):		759		*Serial No.:*	0100
				Calibration Date:	8/10/99
				Qstd Slope (m):	9.55896
				Qstd Intercept (b):	-0.054620

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.25	0.267	70	8.36		
2	5.50	0.251	60	7.74	slope	31.0
3	4.80	0.235	50	7.06	intercept	-0.02
4	3.60	0.204	40	6.32	coor. Coeff	0.9953
5	2.65	0.176	30	5.47		
	sum(x)	1.132	*sum(y)*	34.94		
	sum(x) sq.	0.262	*sum(y) sq*	249		
			sum comb	8.08		
			n	5		
	sum(x)/n	0.226	*sum(y)/n*	6.99		
	sum(x)^2	1.28	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	29.85
Pa (BP mm Hg):	758

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.40	0.247	-1.3	60	7.70	-0.5

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site I, DW#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.209	209	313
m = sampler slope		31.0		
b = sampler intercept		-0.02		
magn = average magnehelic gage reading (inch H2O)		55		
average temperature during run (°F)		72		
Tav = average temperature (°K)		345		
average barometric pressure during run (in Hg)		29.95		
Pav = average pressure (mmHg)		761		
run start time (ET 0.31)		1725		
run end time (ET 25.30)		1824		
total run time (minutes)		1499		

PUF Sampler Calibration and Flow Rate Calculations

Site Information		
Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JWB	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF	
PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990615TR22
Sampler No.:	9

Calibration Orifice	
Model No.:	TE-5040A
Serial No.:	0098
Calibration Date:	8/10/99
Qstd Slope (m):	9.57809
Qstd Intercept (b):	-0.030300

Pre-calibration

	Orifice		Sampler		Linear Regression	
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)		
1	6.70	0.273	70	8.36		
2	5.95	0.258	60	7.74	slope	29.7
3	5.10	0.239	50	7.06	intercept	0.12
4	3.80	0.206	40	6.32	coor. Coeff	0.9959
5	2.85	0.179	30	5.47		
	sum(x)	1.155	*sum(y)*	34.94		
	sum(x) sq.	0.273	*sum(y) sq*	249		
			sum comb	8.24		
			n	5		
	sum(x)/n	0.231	*sum(y)/n*	6.99		
	sum(x)^2	1.33	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	29.85
Pa (BP mm Hg):	758

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
3	5.10	0.238	-0.4	50	7.03	-0.5

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site I, DW#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.221	221	323
m = sampler slope		29.7		
b = sampler intercept		0.12		
magn = average magnehelic gage reading (inch H2O)		60		
average temperature during run (°F)		72		
Tav = average temperature (°K)		345		
average barometric pressure during run (in Hg)		29.94		
Pav = average pressure (mmHg)		760		
run start time (ET 0.17)		1802		
run end time (ET 25.05)		1822		
total run time (minutes)		1460		

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JWP		*Magnehelic Serial No.:*	R9804016F24
Temperature (°F):	78		*Sampler No.:*	10
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0101
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.47526
			Qstd Intercept (b):	-0.044390

Pre-calibraiton

	Orifice		Sampler		Linear Regression	
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)		
1	6.55	0.274	70	8.36		
2	5.75	0.257	60	7.74	slope	31.5
3	4.95	0.239	50	7.06	intercept	-0.37
4	3.85	0.211	40	6.32	coor. Coeff	0.9982
5	2.90	0.184	30	5.47		
	sum(x)	1.167	*sum(y)*	34.94		
	sum(x) sq.	0.277	*sum(y) sq*	249		
			sum comb	8.32		
			n	5		
	sum(x)/n	0.233	*sum(y)/n*	6.99		
	sum(x)^2	1.36	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	29.85
Pa (BP mm Hg):	758

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.25	0.245	-5.0	60	7.70	-0.5

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site H, DW#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.222	222	329
m = sampler slope		31.5		
b = sampler intercept		-0.37		
magn = average magnehelic gage reading (inch H2O)		58		
average temperature during run (°F)		71		
Tav = average temperature (°K)		344		
average barometric pressure during run (in Hg)		29.94		
Pav = average pressure (mmHg)		760		
run start time		1841		
run end time		1923		
total run time (minutes)		1482		

PUF Sampler Calibration and Flow Rate Calculations

Site Information

Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JWP	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF

PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990118ML26
Sampler No.:	11

Calibration Orifice

Model No.:	TE-5040A
Serial No.:	0098
Calibration Date:	8/10/99
Qstd Slope (m):	9.57809
Qstd Intercept (b):	-0.030300

Pre-calibration

Run No.	Orifice Flow ("H2O)	Orifice Qstd (m3/min)	Sampler Magn Flow ("H2O)	Sampler Mang Flow (corrected)	Linear Regression	
1	6.75	0.274	70	8.36		
2	5.80	0.254	60	7.74	slope	30.2
3	5.00	0.236	50	7.06	intercept	0.01
4	4.00	0.212	40	6.32	coor. Coeff	0.9971
5	2.80	0.178	30	5.47		
	sum(x)	1.154	*sum(y)*	34.94		
	sum(x) sq.	0.272	*sum(y) sq*	249		
			sum comb	8.24		
			n	5		
	sum(x)/n	0.231	*sum(y)/n*	6.99		
	sum(x)^2	1.33	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	80
Temperature (°C):	27
Temperature (K):	300
BP (in Hg):	29.87
Pa (BP mm Hg):	759

Run No.	Orifice Flow ("H2O)	Orifice Qstd (m3/min)	Orifice % difference	Sampler Magn Flow ("H2O)	Sampler Mang Flow (corrected)	Sampler % difference
2	5.80	0.254	-0.2	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site H, DW#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.216	216	321

m = sampler slope	30.2
b = sampler intercept	0.01
magn = average magnehelic gage reading (inch H2O)	57
average temperature during run (°F)	71
Tav = average temperature (°K)	344
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1902
run end time	1947
total run time (minutes)	1485

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JDB		*Magnehelic Serial No.:*	R990118ML2
Temperature (°F):	78		*Sampler No.:*	12
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0101
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.47526
			Qstd Intercept (b):	-0.044390

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.50	0.273	70	8.36		
2	5.65	0.255	60	7.74	slope	31.1
3	4.85	0.237	50	7.06	intercept	-0.21
4	3.80	0.210	40	6.32	coor. Coeff	0.9985
5	2.80	0.181	30	5.47		
	sum(x)	1.157	*sum(y)*	34.94		
	sum(x) sq.	0.273	*sum(y) sq*	249		
			sum comb	8.25		
			n	5		
	sum(x)/n	0.231	*sum(y)/n*	6.99		
	sum(x)^2	1.34	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	80
Temperature (°C):	27
Temperature (K):	300
BP (in Hg):	29.86
Pa (BP mm Hg):	758

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.30	0.247	-3.4	60	7.72	-0.3

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site I, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.218	218	321
m = sampler slope		31.1		
b = sampler intercept		-0.21		
magn = average magnehelic gage reading (inch H2O)		58		
average temperature during run (°F)		72		
Tav = average temperature (°K)		345		
average barometric pressure during run (in Hg)		29.93		
Pav = average pressure (mmHg)		760		
run start time		1816		
run end time		1852		
total run time (minutes)		1476		

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JWP		*Magnehelic Serial No.:*	R990322ML36
Temperature (°F):	78		*Sampler No.:*	13
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0101
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.47526
			Qstd Intercept (b):	-0.044390

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	6.70	0.278	70	8.36		
2	6.05	0.264	60	7.74	slope	29.1
3	5.05	0.242	50	7.06	intercept	0.12
4	4.10	0.218	40	6.32	coor. Coeff	0.9926
5	2.75	0.179	30	5.47		
	sum(x)	1.181	*sum(y)*	34.94		
	sum(x) sq.	0.285	*sum(y) sq*	249		
			sum comb	8.43		
			n	5		
	sum(x)/n	0.236	*sum(y)/n*	6.99		
	sum(x)^2	1.39	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.35	0.250	-5.7	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, DW#1	***m*** ^{3}***/min***	***lpm***	***total m*** ^{3}
Sampler flow rate (m ^{3}*/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)*		0.218	218	314

m = sampler slope	29.1
b = sampler intercept	0.12
magn = average magnehelic gage reading (inch H2O)	58
average temperature during run (°F)	77
Tav = average temperature (°K)	350
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	761
run start time	939
run end time	938
total run time (minutes)	1439

PUF Sampler Calibration and Flow Rate Calculation

Site Information		
Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JWP	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF	
PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990115ML24
Sampler No.:	14

Calibration Orifice	
Model No.:	TE-5040A
Serial No.:	0098
Calibration Date:	8/10/99
Qstd Slope (m):	9.57809
Qstd Intercept (b):	-0.030300

Pre-calibration

	Orifice		Sampler		Linear Regression	
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)		
1	7.05	0.280	70	8.36		
2	6.05	0.260	60	7.74	slope	30.8
3	5.20	0.241	50	7.06	intercept	-0.30
4	4.20	0.217	40	6.32	coor. Coeff	0.9987
5	3.05	0.185	30	5.47		
	sum(x)	1.183	*sum(y)*	34.94		
	sum(x) sq.	0.285	*sum(y) sq*	249		
			sum comb	8.43		
			n	5		
	sum(x)/n	0.237	*sum(y)/n*	6.99		
	sum(x)^2	1.40	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	80
Temperature (°C):	27
Temperature (K):	300
BP (in Hg):	29.87
Pa (BP mm Hg):	759

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	6.10	0.260	0.2	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site H, DW#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.216	216	320
m = sampler slope		30.8		
b = sampler intercept		-0.30		
magn = average magnehelic gage reading (inch H2O)		54		
average temperature during run (°F)		71		
Tav = average temperature (°K)		344		
average barometric pressure during run (in Hg)		29.94		
Pav = average pressure (mmHg)		760		
run start time		1902		
run end time		1946		
total run time (minutes)		1484		

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JWP		*Magnehelic Serial No.:*	R990615ML40
Temperature (°F):	78		*Sampler No.:*	15
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0098
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.57809
			Qstd Intercept (b):	-0.030300

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	6.90	0.277	70	8.36		
2	6.15	0.262	60	7.74	slope	31.7
3	5.25	0.242	50	7.06	intercept	-0.54
4	4.25	0.218	40	6.32	coor. Coeff	0.9972
5	3.10	0.187	30	5.47		
	sum(x)	1.186	*sum(y)*	34.94		
	sum(x) sq.	0.286	*sum(y) sq*	249		
			sum comb	8.45		
			n	5		
	sum(x)/n	0.237	*sum(y)/n*	6.99		
	sum(x)^2	1.41	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	80
Temperature (°C):	27
Temperature (K):	300
BP (in Hg):	29.86
Pa (BP mm Hg):	758

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	6.05	0.259	-1.1	60	7.72	-0.3

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site H, DW#2	***m³/min***	***lpm***	***total m³***
Sampler flow rate (m³/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.212	212	314

m = sampler slope	31.7
b = sampler intercept	-0.54
magn = average magnehelic gage reading (inch H2O)	51
average temperature during run (°F)	71
Tav = average temperature (°K)	344
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1843
run end time	1924
total run time (minutes)	1481

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JWP		*Magnehelic Serial No.:*	R990615ML14
Temperature (°F):	78		*Sampler No.:*	16
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0100
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.55896
			Qstd Intercept (b):	-0.054620

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	6.50	0.272	70	8.36		
2	5.90	0.259	60	7.74	slope	33.3
3	5.30	0.246	50	7.06	intercept	-0.88
4	4.10	0.217	40	6.32	coor. Coeff	0.9898
5	3.05	0.188	30	5.47		
	sum(x)	1.183	*sum(y)*	34.94		
	sum(x) sq.	0.285	*sum(y) sq*	249		
			sum comb	8.42		
			n	5		
	sum(x)/n	0.237	*sum(y)/n*	6.99		
	sum(x)^2	1.40	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	80
Temperature (°C):	27
Temperature (K):	300
BP (in Hg):	29.87
Pa (BP mm Hg):	759

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.80	0.257	-1.1	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site H, DW#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.227	227	338

m = sampler slope	33.3
b = sampler intercept	-0.88
magn = average magnehelic gage reading (inch H2O)	59
average temperature during run (°F)	71
Tav = average temperature (°K)	344
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1856
run end time	1948
total run time (minutes)	1492

PUF Sampler Calibration and Flow Rate Calculations

Site Information			**PUF**	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JWP		*Magnehelic Serial No.:*	R990610
Temperature (°F):	78		*Sampler No.:*	17
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0098
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.57809
			Qstd Intercept (b):	-0.030300

Pre-calibration

Run No.	Orifice Flow ("H2O)	Qstd (m3/min)	Sampler Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.65	0.272	70	8.36		
2	5.70	0.252	60	7.74	slope	30.8
3	4.90	0.234	50	7.06	intercept	-0.07
4	3.90	0.209	40	6.32	coor. Coeff	0.9984
5	2.80	0.178	30	5.47		
	sum(x)	1.145	*sum(y)*	34.94		
	sum(x) sq.	0.268	*sum(y) sq*	249		
			sum comb	8.17		
			n	5		
	sum(x)/n	0.229	*sum(y)/n*	6.99		
	sum(x)^2	1.31	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	80
Temperature (°C):	27
Temperature (K):	300
BP (in Hg):	29.87
Pa (BP mm Hg):	759

Run No.	Orifice Flow ("H2O)	Qstd (m3/min)	% difference	Sampler Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	6.10	0.260	3.1	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site H, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.219	219	324

m = sampler slope	30.8
b = sampler intercept	-0.07
magn = average magnehelic gage reading (inch H2O)	59
average temperature during run (°F)	71
Tav = average temperature (°K)	344
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1930
run end time	2013
total run time (minutes)	1483

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JWP		*Magnehelic Serial No.:*	R990015ML17
Temperature (°F):	78		*Sampler No.:*	18
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0098
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.57809
			Qstd Intercept (b):	-0.030300

Pre-calibration

	Orifice		Sampler		Linear Regression	
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)		
1	6.65	0.272	70	8.36		
2	6.00	0.259	60	7.74	slope	30.7
3	5.00	0.236	50	7.06	intercept	-0.11
4	3.90	0.209	40	6.32	coor. Coeff	0.9972
5	2.90	0.181	30	5.47		
	sum(x)	1.157	*sum(y)*	34.94		
	sum(x) sq.	0.273	*sum(y) sq*	249		
			sum comb	8.25		
			n	5		
	sum(x)/n	0.231	*sum(y)/n*	6.99		
	sum(x)^2	1.34	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.85	0.257	-0.8	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, DW#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.212	212	305

m = sampler slope	30.7
b = sampler intercept	-0.11
magn = average magnehelic gage reading (inch H2O)	56
average temperature during run (°F)	77
Tav = average temperature (°K)	350
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	761
run start time	955
run end time	955
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information

Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JWP	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF

PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	
Sampler No.:	19

Calibration Orifice

Model No.:	TE-5040A
Serial No.:	0100
Calibration Date:	8/10/99
Qstd Slope (m):	9.55896
Qstd Intercept (b):	-0.054620

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	6.50	0.272	70	8.36		
2	5.65	0.254	60	7.74	slope	31.8
3	4.65	0.231	50	7.06	intercept	-0.31
4	3.75	0.208	40	6.32	coor. Coeff	0.9998
5	2.85	0.182	30	5.47		
	sum(x)	1.147	*sum(y)*	34.94		
	sum(x) sq.	0.268	*sum(y) sq*	249		
			sum comb	8.18		
			n	5		
	sum(x)/n	0.229	*sum(y)/n*	6.99		
	sum(x)^2	1.32	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.45	0.251	-1.3	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, DW#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.202	202	291

m = sampler slope	31.8
b = sampler intercept	-0.31
magn = average magnehelic gage reading (inch H2O)	51
average temperature during run (°F)	77
Tav = average temperature (°K)	350
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	761
run start time	956
run end time	956
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JWP		*Magnehelic Serial No.:*	R990610ML70
Temperature (°F):		78	*Sampler No.:*	20
Temperature (°C):		26		
Temperature (K):		299		
Elevation (ft):		568 (Lambert airport)	**Calibration Orifice**	
BP (in Hg):		29.9	*Model No.:*	TE-5040A
Pa (BP mm Hg):		759	*Serial No.:*	0100
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.55896
			Qstd Intercept (b):	-0.054620

Pre-calibration

Run No.	Orifice Flow ("H2O)	Orifice Qstd (m3/min)	Sampler Magn Flow ("H2O)	Sampler Mang Flow (corrected)	Linear Regression	
1	6.40	0.270	70	8.36		
2	5.80	0.257	60	7.74	slope	31.1
3	4.90	0.237	50	7.06	intercept	-0.18
4	3.75	0.208	40	6.32	coor. Coeff	0.9957
5	2.80	0.181	30	5.47		
	sum(x)	1.153	*sum(y)*	34.94		
	sum(x) sq.	0.271	*sum(y) sq*	249		
			sum comb	8.22		
			n	5		
	sum(x)/n	0.231	*sum(y)/n*	6.99		
	sum(x)^2	1.33	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

Run No.	Orifice Flow ("H2O)	Orifice Qstd (m3/min)	Orifice % difference	Sampler Magn Flow ("H2O)	Sampler Mang Flow (corrected)	Sampler % difference
2	5.65	0.255	-0.8	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site L, DW#1	***m³/min***	***lpm***	***total m³***
Sampler flow rate (m³/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.216	216	312

m = sampler slope	31.1
b = sampler intercept	-0.18
magn = average magnehelic gage reading (inch H2O)	59
average temperature during run (°F)	77
Tav = average temperature (°K)	350
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1022
run end time	1022
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information				PUF	
Location:	Sauget, IL			*PUF Model No.:*	TE-1000PUF
Date:	9/8/99			*Blower Model No.:*	TE-1004
Operator:	JWP			*Magnehelic Serial No.:*	R990616ML12
Temperature (°F):		78		*Sampler No.:*	21
Temperature (°C):		26			
Temperature (K):		299			
Elevation (ft):		568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):		29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):		759		*Serial No.:*	0098
				Calibration Date:	8/10/99
				Qstd Slope (m):	9.57809
				Qstd Intercept (b):	-0.030300

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	6.85	0.276	70	8.36		
2	6.00	0.259	60	7.74	slope	29.5
3	5.05	0.237	50	7.06	intercept	0.13
4	3.95	0.210	40	6.32	coor. Coeff	0.9985
5	2.85	0.179	30	5.47		
	sum(x)	1.162	*sum(y)*	34.94		
	sum(x) sq.	0.276	*sum(y) sq*	249		
			sum comb	8.29		
			n	5		
	sum(x)/n	0.232	*sum(y)/n*	6.99		
	sum(x)^2	1.35	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.80	0.254	-1.9	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, UP#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.208	208	300
m = sampler slope		29.5		
b = sampler intercept		0.13		
magn = average magnehelic gage reading (inch H2O)		55		
average temperature during run (°F)		80		
Tav = average temperature (°K)		353		
average barometric pressure during run (in Hg)		29.94		
Pav = average pressure (mmHg)		760		
run start time		1105		
run end time		1105		
total run time (minutes)		1440		

PUF Sampler Calibration and Flow Rate Calculations

Site Information		
Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JDB	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF	
PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R9906757R44
Sampler No.:	22

Calibration Orifice	
Model No.:	TE-5040A
Serial No.:	0101
Calibration Date:	8/10/99
Qstd Slope (m):	9.47526
Qstd Intercept (b):	-0.044390

Pre-calibration

	Orifice		Sampler		Linear Regression	
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)		
1	6.40	0.271	70	8.36		
2	5.70	0.256	60	7.74	slope	32.7
3	4.90	0.238	50	7.06	intercept	-0.62
4	3.90	0.213	40	6.32	coor. Coeff	0.9974
5	2.90	0.184	30	5.47		
	sum(x)	1.163	*sum(y)*	34.94		
	sum(x) sq.	0.275	*sum(y) sq*	249		
			sum comb	8.28		
			n	5		
	sum(x)/n	0.233	*sum(y)/n*	6.99		
	sum(x)^2	1.35	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.45	0.250	-2.4	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.218	218	315

m = sampler slope	32.7
b = sampler intercept	-0.62
magn = average magnehelic gage reading (inch H2O)	60
average temperature during run (°F)	80
Tav = average temperature (°K)	353
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1128
run end time	1128
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information			**PUF**	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JDB		*Magnehelic Serial No.:*	R9906116ML2
Temperature (°F):	78		*Sampler No.:*	23
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0101
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.47526
			Qstd Intercept (b):	-0.044390

Pre-calibration

	Orifice		**Sampler**			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.13	0.266	70	8.36		
2	5.50	0.252	60	7.74	slope	32.2
3	4.65	0.232	50	7.06	intercept	-0.30
4	3.65	0.206	40	6.32	coor. Coeff	0.9972
5	2.70	0.178	30	5.47		
	sum(x)	1.133	*sum(y)*	34.94		
	sum(x) sq.	0.262	*sum(y) sq*	249		
			sum comb	8.08		
			n	5		
	sum(x)/n	0.227	*sum(y)/n*	6.99		
	sum(x)^2	1.28	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	84
Temperature (°C):	29
Temperature (K):	302
BP (in Hg):	29.99
Pa (BP mm Hg):	762

	Orifice			**Sampler**		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	4.90	0.237	-6.2	60	7.70	-0.4

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site L, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.207	207	298

m = sampler slope	32.2
b = sampler intercept	-0.30
magn = average magnehelic gage reading (inch H2O)	57
average temperature during run (°F)	81
Tav = average temperature (°K)	354
average barometric pressure during run (in Hg)	29.93
Pav = average pressure (mmHg)	760
run start time	1230
run end time	1230
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JDB		*Magnehelic Serial No.:*	R990616ML11
Temperature (°F):	78		*Sampler No.:*	24
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0101
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.47526
			Qstd Intercept (b):	-0.044390

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.60	0.275	70	8.36		
2	5.75	0.257	60	7.74	slope	32.0
3	4.95	0.239	50	7.06	intercept	-0.53
4	4.10	0.218	40	6.32	coor. Coeff	0.9963
5	2.90	0.184	30	5.47		
	sum(x)	1.174	*sum(y)*	34.94		
	sum(x) sq.	0.281	*sum(y) sq*	249		
			sum comb	8.37		
			n	5		
	sum(x)/n	0.235	*sum(y)/n*	6.99		
	sum(x)^2	1.38	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	84
Temperature (°C):	29
Temperature (K):	302
BP (in Hg):	29.99
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.50	0.251	-2.6	60	7.70	-0.4

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site L, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.211	211	304
m = sampler slope		32.0		
b = sampler intercept		-0.53		
magn = average magnehelic gage reading (inch H2O)		55		
average temperature during run (°F)		81		
Tav = average temperature (°K)		354		
average barometric pressure during run (in Hg)		29.93		
Pav = average pressure (mmHg)		760		
run start time		1231		
run end time		1231		
total run time (minutes)		1440		

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JDB		*Magnehelic Serial No.:*	8990610TR5
Temperature (°F):	78		*Sampler No.:*	25
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0101
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.47526
			Qstd Intercept (b):	-0.044390

Pre-calibration

Run No.	Orifice Flow ("H2O)	Orifice Qstd (m3/min)	Sampler Magn Flow ("H2O)	Sampler Mang Flow (corrected)	Linear Regression	
1	6.70	0.278	70	8.36		
2	5.90	0.261	60	7.74	slope	30.6
3	5.05	0.242	50	7.06	intercept	-0.22
4	3.90	0.213	40	6.32	coor. Coeff	0.9979
5	2.92	0.185	30	5.47		
	sum(x)	1.177	*sum(y)*	34.94		
	sum(x) sq.	0.283	*sum(y) sq*	249		
			sum comb	8.40		
			n	5		
	sum(x)/n	0.235	*sum(y)/n*	6.99		
	sum(x)^2	1.39	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	84
Temperature (°C):	29
Temperature (K):	302
BP (in Hg):	29.99
Pa (BP mm Hg):	762

Run No.	Orifice Flow ("H2O)	Orifice Qstd (m3/min)	% difference	Sampler Magn Flow ("H2O)	Sampler Mang Flow (corrected)	% difference
2	5.50	0.251	-3.9	60	7.70	-0.4

Flow rate calculations:

Sampling date:	910/99-9/11/99			
Location:	Site L, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.220	220	317

m = sampler slope	30.6
b = sampler intercept	-0.22
magn = average magnehelic gage reading (inch H2O)	60
average temperature during run (°F)	81
Tav = average temperature (°K)	354
average barometric pressure during run (in Hg)	29.93
Pav = average pressure (mmHg)	760
run start time	1229
run end time	1229
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information

Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JDB	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF

PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990114ML52
Sampler No.:	26

Calibration Orifice

Model No.:	TE-5040A
Serial No.:	0101
Calibration Date:	8/10/99
Qstd Slope (m):	9.47526
Qstd Intercept (b):	-0.044390

	Orifice		**Sampler**			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.80	0.280	70	8.36		
2	6.05	0.264	60	7.74	slope	31.4
3	5.10	0.243	50	7.06	intercept	-0.51
4	4.10	0.218	40	6.32	coor. Coeff	0.9985
5	3.05	0.189	30	5.47		
	sum(x)	1.193	*sum(y)*	34.94		
	sum(x) sq.	0.290	*sum(y) sq*	249		
			sum comb	8.50		
			n	5		
	sum(x)/n	0.239	*sum(y)/n*	6.99		
	sum(x)^2	1.42	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			**Sampler**		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.60	0.254	-4.1	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.210	210	302

m = sampler slope	31.4
b = sampler intercept	-0.51
magn = average magnehelic gage reading (inch H2O)	51
average temperature during run (°F)	79
Tav = average temperature (°K)	352
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1126
run end time	1126
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JDB		*Magnehelic Serial No.:*	R980401LF6
Temperature (°F):	78		*Sampler No.:*	27
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0101
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.47526
			Qstd Intercept (b):	-0.044390

Pre-calibration

	Orifice		Sampler		Linear Regression	
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)		
1	6.40	0.271	70	8.36		
2	5.90	0.261	60	7.74	slope	30.6
3	4.70	0.233	50	7.06	intercept	-0.08
4	3.90	0.213	40	6.32	coor. Coeff	0.9943
5	2.75	0.179	30	5.47		
	sum(x)	1.158	*sum(y)*	34.94		
	sum(x) sq.	0.273	*sum(y) sq*	249		
			sum comb	8.26		
			n	5		
	sum(x)/n	0.232	*sum(y)/n*	6.99		
	sum(x)^2	1.34	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.30	0.247	-5.6	60	7.72	-0.2

Flow rate calculations:

Sampling date: 9/10/99-9/11/99				
Location: Site G, UP#2		***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.202	202	291
	m = sampler slope	30.6		
	b = sampler intercept	-0.08		
	magn = average magnehelic gage reading (inch H2O)	52		
	average temperature during run (°F)	80		
	Tav = average temperature (°K)	353		
	average barometric pressure during run (in Hg)	29.94		
	Pav = average pressure (mmHg)	760		
	run start time	1104		
	run end time	1104		
	total run time (minutes)	1440		

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JDB		*Magnehelic Serial No.:*	R98072110L42
Temperature (°F):	78		*Sampler No.:*	28
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568 (Lambert airport)		**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0101
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.47526
			Qstd Intercept (b):	-0.044390

	Orifice		Sampler		Linear Regression	
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)		
1	6.65	0.276	70	8.36		
2	5.85	0.260	60	7.74	slope	30.5
3	4.90	0.238	50	7.06	intercept	-0.15
4	3.90	0.213	40	6.32	coor. Coeff	0.9989
5	2.85	0.183	30	5.47		
	sum(x)	1.170	*sum(y)*	34.94		
	sum(x) sq.	0.279	*sum(y) sq*	249		
			sum comb	8.34		
			n	5		
	sum(x)/n	0.234	*sum(y)/n*	6.99		
	sum(x)^2	1.37	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.50	0.251	-3.3	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.214	214	308

m = sampler slope	30.5
b = sampler intercept	-0.15
magn = average magnehelic gage reading (inch H2O)	57
average temperature during run (°F)	79
Tav = average temperature (°K)	352
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1127
run end time	1127
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information		
Location:	Sauget, IL	
Date:	9/8/99	
Operator:	AJC	
Temperature (°F):		78
Temperature (°C):		26
Temperature (K):		299
Elevation (ft):		568 (Lambert airport)
BP (in Hg):		29.9
Pa (BP mm Hg):		759

PUF	
PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990615TR47
Sampler No.:	29

Calibration Orifice	
Model No.:	TE-5040A
Serial No.:	0099
Calibration Date:	8/10/99
Qstd Slope (m):	9.71704
Qstd Intercept (b):	-0.032420

Pre-calibration

	Orifice		Sampler		Linear Regression	
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)		
1	7.00	0.275	70	8.36		
2	6.15	0.258	60	7.74	slope	30.5
3	5.15	0.237	50	7.06	intercept	-0.11
4	4.10	0.211	40	6.32	coor. Coeff	0.9990
5	3.00	0.181	30	5.47		
	sum(x)	1.163	*sum(y)*	34.94		
	sum(x) sq.	0.276	*sum(y) sq*	249		
			sum comb	8.30		
			n	5		
	sum(x)/n	0.233	*sum(y)/n*	6.99		
	sum(x)^2	1.35	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.80	0.252	-2.5	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site L, DW#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.215	215	309

m = sampler slope	30.5
b = sampler intercept	-0.11
magn = average magnehelic gage reading (inch H2O)	57
average temperature during run (°F)	78
Tav = average temperature (°K)	351
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1033
run end time	1033
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information		PUF	
Location:	Sauget, IL	*PUF Model No.:*	TE-1000PUF
Date:	9/8/99	*Blower Model No.:*	TE-1004
Operator:	JDB	*Magnehelic Serial No.:*	R990615TR36
Temperature (°F):	78	*Sampler No.:*	30
Temperature (°C):	26		
Temperature (K):	299		
Elevation (ft):	568 (Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9	*Model No.:*	TE-5040A
Pa (BP mm Hg):	759	*Serial No.:*	0101
		Calibration Date:	8/10/99
		Qstd Slope (m):	9.47526
		Qstd Intercept (b):	-0.044390

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	6.40	0.271	70	8.36		
2	5.80	0.259	60	7.74	slope	31.3
3	4.80	0.236	50	7.06	intercept	-0.25
4	3.85	0.211	40	6.32	coor. Coeff	0.9968
5	2.80	0.181	30	5.47		
	sum(x)	1.158	*sum(y)*	34.94		
	sum(x) sq.	0.273	*sum(y) sq*	249		
			sum comb	8.26		
			n	5		
	sum(x)/n	0.232	*sum(y)/n*	6.99		
	sum(x)^2	1.34	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.30	0.248	-4.0	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site L, DW#2	***m³/min***	***lpm***	***total m³***
Sampler flow rate (m³/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.205	205	296

m = sampler slope	31.3
b = sampler intercept	-0.25
magn = average magnehelic gage reading (inch H2O)	53
average temperature during run (°F)	78
Tav = average temperature (°K)	351
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1034
run end time	1034
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information		
Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JDB	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF	
PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990616ML1
Sampler No.:	31

Calibration Orifice	
Model No.:	TE-5040A
Serial No.:	0099
Calibration Date:	8/10/99
Qstd Slope (m):	9.71704
Qstd Intercept (b):	-0.032420

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	7.00	0.275	70	8.36		
2	6.20	0.259	60	7.74	slope	30.3
3	5.00	0.233	50	7.06	intercept	-0.03
4	4.05	0.210	40	6.32	coor. Coeff	0.9989
5	3.00	0.181	30	5.47		
	sum(x)	1.159	*sum(y)*	34.94		
	sum(x) sq.	0.274	*sum(y) sq*	249		
			sum comb	8.27		
			n	5		
	sum(x)/n	0.232	*sum(y)/n*	6.99		
	sum(x)^2	1.34	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.90	0.254	-2.0	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, DW#2	***m³/min***	***lpm***	***total m³***
Sampler flow rate (m³/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.216	216	311
m = sampler slope		30.3		
b = sampler intercept		-0.03		
magn = average magnehelic gage reading (inch H2O)		58		
average temperature during run (°F)		77		
Tav = average temperature (°K)		350		
average barometric pressure during run (in Hg)		29.94		
Pav = average pressure (mmHg)		761		
run start time		957		
run end time		957		
total run time (minutes)		1440		

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JDB		*Magnehelic Serial No.:*	R990115524
Temperature (°F):	78		*Sampler No.:*	32
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0101
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.47526
			Qstd Intercept (b):	-0.044390

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.60	0.275	70	8.36		
2	6.00	0.263	60	7.74	slope	31.0
3	5.20	0.245	50	7.06	intercept	-0.37
4	4.15	0.219	40	6.32	coor. Coeff	0.9909
5	2.90	0.184	30	5.47		
	sum(x)	1.187	*sum(y)*	34.94		
	sum(x) sq.	0.287	*sum(y) sq*	249		
			sum comb	8.46		
			n	5		
	sum(x)/n	0.237	*sum(y)/n*	6.99		
	sum(x)^2	1.41	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.50	0.253	-3.9	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, DW#1	***m³/min***	***lpm***	***total m³***
Sampler flow rate (m³/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.213	213	307
m = sampler slope		31.0		
b = sampler intercept		-0.37		
magn = average magnehelic gage reading (inch H2O)		54		
average temperature during run (°F)		77		
Tav = average temperature (°K)		350		
average barometric pressure during run (in Hg)		29.94		
Pav = average pressure (mmHg)		761		
run start time (ET 0.14)		944		
run end time (ET 24.37)		944		
total run time (minutes)		1440		

PUF Sampler Calibration and Flow Rate Calculations

Site Information

Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JDB	
Temperature (°F):		78
Temperature (°C):		26
Temperature (K):		299
Elevation (ft):		568 (Lambert airport)
BP (in Hg):		29.9
Pa (BP mm Hg):		759

PUF

PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990115ML20
Sampler No.:	33

Calibration Orifice

Model No.:	TE-5040A
Serial No.:	0099
Calibration Date:	8/10/99
Qstd Slope (m):	9.71704
Qstd Intercept (b):	-0.032420

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	6.40	0.263	70	8.36		
2	5.60	0.247	60	7.74	slope	32.7
3	4.75	0.227	50	7.06	intercept	-0.31
4	3.80	0.204	40	6.32	coor. Coeff	0.9990
5	2.80	0.175	30	5.47		
	sum(x)	1.116	*sum(y)*	34.94		
	sum(x) sq.	0.254	*sum(y) sq*	249		
			sum comb	7.96		
			n	5		
	sum(x)/n	0.223	*sum(y)/n*	6.99		
	sum(x)^2	1.25	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	80
Temperature (°C):	27
Temperature (K):	300
BP (in Hg):	29.87
Pa (BP mm Hg):	759

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.50	0.244	-1.1	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site H, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.220	220	326

m = sampler slope	32.7
b = sampler intercept	-0.31
magn = average magnehelic gage reading (inch H2O)	63
average temperature during run (°F)	71
Tav = average temperature (°K)	344
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1927
run end time	2012
total run time (minutes)	1485

PUF Sampler Calibration and Flow Rate Calculations

Site Information			PUF	
Location:	Sauget, IL		*PUF Model No.:*	TE-1000PUF
Date:	9/8/99		*Blower Model No.:*	TE-1004
Operator:	JDB		*Magnehelic Serial No.:*	R9906107286
Temperature (°F):	78		*Sampler No.:*	34
Temperature (°C):	26			
Temperature (K):	299			
Elevation (ft):	568	(Lambert airport)	**Calibration Orifice**	
BP (in Hg):	29.9		*Model No.:*	TE-5040A
Pa (BP mm Hg):	759		*Serial No.:*	0099
			Calibration Date:	8/10/99
			Qstd Slope (m):	9.71704
			Qstd Intercept (b):	-0.032420

Pre-calibration

	Orifice		Sampler		Linear Regression	
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)		
1	6.80	0.271	70	8.36		
2	6.05	0.256	60	7.74	slope	29.1
3	5.05	0.234	50	7.06	intercept	0.34
4	3.80	0.204	40	6.32	coor. Coeff	0.9971
5	2.80	0.175	30	5.47		
	sum(x)	1.141	*sum(y)*	34.94		
	sum(x) sq.	0.266	*sum(y) sq*	249		
			sum comb	8.15		
			n	5		
	sum(x)/n	0.228	*sum(y)/n*	6.99		
	sum(x)^2	1.30	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	82
Temperature (°C):	28
Temperature (K):	301
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	6.10	0.257	0.2	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, UP#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.206	206	297
m = sampler slope		29.1		
b = sampler intercept		0.34		
magn = average magnehelic gage reading (inch H2O)		57		
average temperature during run (°F)		80		
Tav = average temperature (°K)		353		
average barometric pressure during run (in Hg)		29.94		
Pav = average pressure (mmHg)		760		
run start time		1106		
run end time		1106		
total run time (minutes)		1440		

PUF Sampler Calibration and Flow Rate Calculations

Site Information		
Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JDB	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF	
PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R9906751R42
Sampler No.:	35

Calibration Orifice	
Model No.:	TE-5040A
Serial No.:	0100
Calibration Date:	8/10/99
Qstd Slope (m):	9.55896
Qstd Intercept (b):	-0.054620

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.50	0.272	70	8.36		
2	5.80	0.257	60	7.74	slope	31.1
3	4.95	0.238	50	7.06	intercept	-0.22
4	3.90	0.212	40	6.32	coor. Coeff	0.9962
5	2.80	0.181	30	5.47		
	sum(x)	1.160	*sum(y)*	34.94		
	sum(x) sq.	0.275	*sum(y) sq*	249		
			sum comb	8.27		
			n	5		
	sum(x)/n	0.232	*sum(y)/n*	6.99		
	sum(x)^2	1.35	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	6.15	0.266	3.3	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site L, DW#2	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.207	207	298

m = sampler slope	31.1
b = sampler intercept	-0.22
magn = average magnehelic gage reading (inch H2O)	53
average temperature during run (°F)	78
Tav = average temperature (°K)	351
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1035
run end time	1035
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information

Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JDB	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF

PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990118ML42
Sampler No.:	36

Calibration Orifice

Model No.:	TE-5040A
Serial No.:	0099
Calibration Date:	8/10/99
Qstd Slope (m):	9.71704
Qstd Intercept (b):	-0.032420

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	7.25	0.280	70	8.36		
2	6.30	0.261	60	7.74	slope	32.2
3	5.55	0.245	50	7.06	intercept	-0.72
4	4.45	0.220	40	6.32	coor. Coeff	0.9973
5	3.30	0.190	30	5.47		
	sum(x)	1.197	*sum(y)*	34.94		
	sum(x) sq.	0.292	*sum(y) sq*	249		
			sum comb	8.53		
			n	5		
	sum(x)/n	0.239	*sum(y)/n*	6.99		
	sum(x)^2	1.43	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	6.30	0.263	0.5	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site L, DW#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.211	211	304

m = sampler slope	32.2
b = sampler intercept	-0.72
magn = average magnehelic gage reading (inch H2O)	51
average temperature during run (°F)	77
Tav = average temperature (°K)	350
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1019
run end time	1019
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information		
Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JDB	
Temperature (°F):		78
Temperature (°C):		26
Temperature (K):		299
Elevation (ft):		568 (Lambert airport)
BP (in Hg):		29.9
Pa (BP mm Hg):		759

PUF	
PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990115ML32
Sampler No.:	37

Calibration Orifice	
Model No.:	TE-5040A
Serial No.:	0100
Calibration Date:	8/10/99
Qstd Slope (m):	9.55896
Qstd Intercept (b):	-0.054620

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	Linear Regression	
1	6.55	0.273	70	8.36		
2	5.90	0.259	60	7.74	slope	31.7
3	5.10	0.242	50	7.06	intercept	-0.46
4	4.05	0.216	40	6.32	coor. Coeff	0.9940
5	2.90	0.184	30	5.47		
	sum(x)	1.174	*sum(y)*	34.94		
	sum(x) sq.	0.281	*sum(y) sq*	249		
			sum comb	8.36		
			n	5		
	sum(x)/n	0.235	*sum(y)/n*	6.99		
	sum(x)^2	1.38	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.75	0.257	-0.8	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site L, DW#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.209	209	300

m = sampler slope	31.7
b = sampler intercept	-0.46
magn = average magnehelic gage reading (inch H2O)	52
average temperature during run (°F)	77
Tav = average temperature (°K)	350
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1021
run end time	1021
total run time (minutes)	1440

PUF Sampler Calibration and Flow Rate Calculations

Site Information		
Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JDB	
Temperature (°F):		78
Temperature (°C):		26
Temperature (K):		299
Elevation (ft):		568 (Lambert airport)
BP (in Hg):		29.9
Pa (BP mm Hg):		759

PUF	
PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990615ML23
Sampler No.:	38

Calibration Orifice	
Model No.:	TE-5040A
Serial No.:	0099
Calibration Date:	8/10/99
Qstd Slope (m):	9.71704
Qstd Intercept (b):	-0.032420

Pre-calibration

	Orifice		Sampler			
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)	**Linear Regression**	
1	6.80	0.271	70	8.36		
2	6.00	0.255	60	7.74	slope	31.6
3	5.10	0.235	50	7.06	intercept	-0.30
4	4.00	0.209	40	6.32	coor. Coeff	0.9986
5	3.00	0.181	30	5.47		
	sum(x)	1.152	*sum(y)*	34.94		
	sum(x) sq.	0.271	*sum(y) sq*	249		
			sum comb	8.22		
			n	5		
	sum(x)/n	0.230	*sum(y)/n*	6.99		
	sum(x)^2	1.33	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	75
Temperature (°C):	24
Temperature (K):	297
BP (in Hg):	30.01
Pa (BP mm Hg):	762

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.95	0.255	0.0	60	7.77	0.5

Flow rate calculations:

Sampling date:	9/10/99-9/11/99			
Location:	Site G, DW#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.210	210	302

m = sampler slope	31.6
b = sampler intercept	-0.30
magn = average magnehelic gage reading (inch H2O)	55
average temperature during run (°F)	77
Tav = average temperature (°K)	350
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	761
run start time	943
run end time	942
total run time (minutes)	1439

PUF Sampler Calibration and Flow Rate Calculations

Site Information		
Location:	Sauget, IL	
Date:	9/8/99	
Operator:	JDB	
Temperature (°F):	78	
Temperature (°C):	26	
Temperature (K):	299	
Elevation (ft):	568	(Lambert airport)
BP (in Hg):	29.9	
Pa (BP mm Hg):	759	

PUF	
PUF Model No.:	TE-1000PUF
Blower Model No.:	TE-1004
Magnehelic Serial No.:	R990615ML21
Sampler No.:	39

Calibration Orifice	
Model No.:	TE-5040A
Serial No.:	0101
Calibration Date:	8/10/99
Qstd Slope (m):	9.47526
Qstd Intercept (b):	-0.044390

Pre-calibration

	Orifice		Sampler		Linear Regression	
Run No.	Flow ("H2O)	Qstd (m3/min)	Magn Flow ("H2O)	Mang Flow (corrected)		
1	6.50	0.273	70	8.36		
2	5.65	0.255	60	7.74	slope	31.6
3	4.80	0.236	50	7.06	intercept	-0.33
4	3.80	0.210	40	6.32	coor. Coeff	0.9995
5	2.85	0.183	30	5.47		
	sum(x)	1.157	*sum(y)*	34.94		
	sum(x) sq.	0.273	*sum(y) sq*	249		
			sum comb	8.25		
			n	5		
	sum(x)/n	0.231	*sum(y)/n*	6.99		
	sum(x)^2	1.34	*sum(y)^2*	1221		

Post-calibraiton

Temperature (°F):	80
Temperature (°C):	27
Temperature (K):	300
BP (in Hg):	29.87
Pa (BP mm Hg):	759

	Orifice			Sampler		
Run No.	Flow ("H2O)	Qstd (m3/min)	% difference	Magn Flow ("H2O)	Mang Flow (corrected)	% difference
2	5.30	0.247	-3.4	60	7.72	-0.2

Flow rate calculations:

Sampling date:	9/9/99-9/10/99			
Location:	Site H, UP#1	***m^3/min***	***lpm***	***total m^3***
Sampler flow rate (m^3/min) = 1/m([Sqrt(magn)(Pav/760)(298/Tav)]-b)		0.205	205	305

m = sampler slope	31.6
b = sampler intercept	-0.33
magn = average magnehelic gage reading (inch H2O)	50
average temperature during run (°F)	71
Tav = average temperature (°K)	344
average barometric pressure during run (in Hg)	29.94
Pav = average pressure (mmHg)	760
run start time	1925
run end time	2012
total run time (minutes)	1487

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

[X] 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
[ ] 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax: (904) 878-9504
[ ] 414 SW 12th Avenue, Deerfield Beach, FL 33442 — Phone: (954) 421-7400 — Fax: (954) 421-2584
[ ] 900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
[ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049
[ ] 100 Alpha Drive, Suite 110, Destrehan, LA 70047 — Phone: (504) 764-1100 — Fax: (504) 725-1163

PROJECT REFERENCE: Solutia Sauget Area 1
PROJECT NO.: 23518.70.001
PO NUMBER: Direct Bill To Solutia
PROJECT LOC. (State): IL
SAMPLER(s) NAME: [illegible]
PHONE: (314) 812-1550
FAX: (314) 812-1266
CLIENT NAME: Solutia Inc / O'Brien & Gere
CLIENT PROJECT MANAGER: Solutia: Kimberly Ray; OBG: Alan Cork
CLIENT ADDRESS (CITY, STATE, ZIP): St. Louis, MO 63141

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc)

REQUIRED ANALYSES: Metals (Wipe) (?)

PAGE 1 OF 2

[X] STANDARD REPORT DELIVERY
[ ] EXPEDITED REPORT DELIVERY (surcharge)
Date Due

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED										REMARKS
9/10/99	1725		AIR - M - 1			X		X				-						
9/10/99	1750		AIR - M - 2			X		X										
9/10/99	1815		AIR - M - 3			X		X										
9/10/99	1839		AIR - M - 4			X		X										
9/10/99	1858		AIR - M - 5			X		X										
9/10/99	1920		AIR - M - 6			X		X										
9/11/99	0933		AIR - M - 7			X		X										
9/11/99	0955		AIR - M - 8			X		X										
9/11/99	1133		AIR - M - 9			X		X										
9/11/99	1159		AIR - M - 10			X		X										
9/11/99	1217		AIR - M - 11			X		X										
9/11/99	[illegible]		AIR - M - 12			X		X										
9/11/99	1230		AIR - M - 13			X		X										

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	9/13/99	0830						
RECEIVED BY: (SIGNATURE) FedEx AB# 812789433609	9/13/99	0830	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS:
			[ ] YES [ ] NO			

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289A-1

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

☒ 5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (904) 878-3994 Fax: (904) 878-9504
☐ 414 SW 12th Avenue, Deerfield Beach, FL 33442 Phone: (954) 421-7400 Fax: (954) 421-2584
☐ 900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049
☐ 100 Alpha Drive, Suite 110, Destrehan, LA 70047 Phone: (504) 764-1100 Fax: (504) 725-1163

PROJECT REFERENCE	[illegible]
PROJECT NO.	[illegible]
P.O NUMBER	[illegible]
PROJECT LOC. (State)	IL
SAMPLER(s) NAME	[illegible]
PHONE	[illegible]
FAX	[illegible]
CLIENT NAME	[illegible]
CLIENT PROJECT MANAGER	[illegible] Alan Cook
CLIENT ADDRESS (CITY, STATE, ZIP)	St. Louis MO [illegible]

MATRIX TYPE: AQUEOUS (WATER), SOLID OR SEMISOLID, AIR, NONAQUEOUS LIQUID (oil, solvent, etc)

REQUIRED ANALYSES: Metals [illegible] | [illegible] (TO13)

PAGE 2 OF 2

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	Metals	[illegible] (TO13)									REMARKS
9/11/99	1535		AIR-M-FB			X		X										Field Blank
9/10/99	1724		AIR-S-1			X			X									
9/10/99	1745		AIR-S-2			X			X									
9/10/99	1819		AIR-S-3			X			X									
9/10/99	1843		AIR-S-4			X			X									
9/10/99	1906		AIR-S-5			X			X									
9/10/99	1927		AIR-S-6			X			X									
9/11/99	0842		AIR-S-7			X			X									
9/11/99	0956		AIR-S-8			X			X									
9/11/99	1127		AIR-S-9			X			X									
9/11/99	1212		AIR-S-FB			X			X									Field Blank

NUMBER OF CONTAINERS SUBMITTED

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[signature]	9/13/99	0830						
RECEIVED BY: (SIGNATURE) FedEx AR# 812789433609	9/13/99	0830	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS
			☐ YES ☐ NO			

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Number

1 From Please print and press hard

Date 9/13/99 Sender's FedEx Account Number 1187-9587-3

Sender's Name Alan Cork Phone (314) 842-4550

Company O'Brien & Gere

Address 5000 Cedar Plaza Parkway Suite 211 Dept./Floor/Suite/Room

City St. Louis State MO ZIP 63128

2 Your Internal Billing Reference 23548.070.001

First 24 characters will appear on invoice

3 To

Recipient's Name Lab Receiving Phone (912) 354-7858

Company Savannah Laboratories

Address 5102 LaRoche Ave

We cannot deliver to P.O. boxes or P.O. ZIP codes Dept./Floor/Suite/Room

To "HOLD" at FedEx location, print FedEx address here

City Savannah State GA ZIP 31404

Questions? Call 1·800·Go·FedEx® (800-463-3339)

Visit our Web site at www.fedex.com

By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.

4a Express Package Service — Packages up to 150 lbs.

Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day* — Second business day
- [ ] FedEx Express Saver* — Third business day

* FedEx Letter Rate not available. Minimum charge: One pound rate

4b Express Freight Service — Packages over 150 lbs.

Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation:

5 Packaging * Declared value limit $500

- [ ] FedEx Letter*
- [ ] FedEx Pak*
- [x] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

- [ ] Saturday Delivery — Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] Sunday Delivery — Available for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked

- [x] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Dangerous Goods cannot be shipped in FedEx packaging

- [ ] Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below

- [x] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. Credit Card No. Exp. Date

Total Packages	Total Weight	Total Declared Value†	
1	46	$ .00	FedEx Use Only

†Our liability is limited to $100 unless you declare a higher value. See back for details.

8 Release Signature Sign to authorize delivery without obtaining signature

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

360

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289A-3

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

☒ 5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (904) 878-3994 Fax: (904) 878-9504
☐ 414 SW 12th Avenue, Deerfield Beach, FL 33442 Phone: (954) 421-7400 Fax: (954) 421-2584
☐ 900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049
☐ 100 Alpha Drive, Suite 110, Destrehan, LA 70047 Phone: (504) 764-1100 Fax: (504) 725-1163

PROJECT REFERENCE: Solutia Sauget Area 1
PROJECT NO.: 235.16070.001
P.O. NUMBER: Direct Bill to Solutia
PROJECT LOC. (State): IL
SAMPLER(s) NAME: Bill Wright, Alan Cook, John N...
PHONE: 314-842-4550
FAX: 314-842-3266
CLIENT NAME: Solutia Inc / O'Brien & Gere
CLIENT PROJECT MANAGER: Solutia - Kimberly Perry; OBG - Alan Cook
CLIENT ADDRESS (CITY, STATE, ZIP): St Louis, MO 63141

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc)

REQUIRED ANALYSES: SVOCs (TO-13) Cat foot; PCBs (TO-4)

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	SVOCs (TO-13)	PCBs (TO-4)								REMARKS
9/11/99	1105		AIR-S-10			X		X									
9/11/99	1021		AIR-S-11			X		X									
9/11/99	1034		AIR-S-12			X		X									
9/11/99	1230		AIR-S-13			X		X									
9/10/99	1726		AIR-P-1			X			X								
9/10/99	1750		AIR-P-2			X			X								
9/10/99	1818		AIR-P-3			X			X								
9/10/99	1841		AIR-P-4			X			X								

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Alan J. Cook	9/13/99	0830						
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
Fed Ex AB# 812789433610	9/13/99	0830						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS:
			☐ YES ☐ NO			

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289A-4

FedEx USA Airbill Tracking Number 807433640 | Form I.D. No. 0200

1 From Please print and press hard

Date 9/13/99 | Sender's FedEx Account Number 1187-9587-3

Sender's Name Alan J Cork | Phone (314) 842-4550

Company O'Brien & Gere

Address 5000 Cedar Plaza Parkway Suite 211 | Dept./Floor/Suite/Room

City St. Louis | State Mo | ZIP 63128

2 Your Internal Billing Reference First 24 characters will appear on invoice. 23548.070.001

3 To

Recipient's Name Lab Receiving | Phone (912) 354-7858

Company Savannah Laboratories

Address 5102 LaRoche Ave | Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

To "HOLD" at FedEx location, print FedEx address here

City Savannah | State GA | ZIP 31404

Questions? Call 1·800·Go·FedEx® (800-463-3339)

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By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.

4a Express Package Service — *Packages up to 150 lbs.* Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day* — Second business day
- [ ] FedEx Express Saver* — Third business day

* FedEx Letter Rate not available. Minimum charge: One pound rate

4b Express Freight Service — *Packages over 150 lbs.* Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation

5 Packaging — * Declared value limit $500

- [ ] FedEx Letter*
- [ ] FedEx Pak*
- [X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

- [ ] Saturday Delivery — Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] Sunday Delivery — Available for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked

- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ___ x ___ kg

Dangerous Goods cannot be shipped in FedEx packaging. [ ] Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below

- [X] Sender — Acct. No. in Section 1 will be billed
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. | Exp. Date

Total Packages	Total Weight	Total Declared Value†
1	32	$ .00

†Our liability is limited to $100 unless you declare a higher value. See back for details.

FedEx Use Only

8 Release Signature Sign to authorize delivery without obtaining signature

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

360

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289A-5

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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[ ]	2846 Industrial Plaza Drive, Tallahassee, FL 32301	Phone: (904) 878-3994	Fax: (904) 878-9504
[ ]	414 SW 12th Avenue, Deerfield Beach, FL 33442	Phone: (954) 421-7400	Fax: (954) 421-2584
[ ]	900 Lakeside Drive, Mobile, AL 36693	Phone: (334) 666-6633	Fax: (334) 666-6696
[ ]	6712 Benjamin Road, Suite 100, Tampa, FL 33634	Phone: (813) 885-7427	Fax: (813) 885-7049
[ ]	100 Alpha Drive, Suite 110, Destrehan, LA 70047	Phone: (504) 764-1100	Fax: (504) 725-1163

PROJECT REFERENCE: Solutia Sauget Area 1
PROJECT NO.: 23548.070.001
PO NUMBER: David Dillon to Solutia
PROJECT LOC. (State): IL
SAMPLER(s) NAME: Bill Wright, Alan Cork, Rob Neumann
PHONE: (314) 842-1550
FAX: (314) 842-1266
CLIENT NAME: Solutia Inc. / [illegible]
CLIENT PROJECT MANAGER: Solutia - Kimberly Perry; [illegible] - Alan Cork
CLIENT ADDRESS (CITY, STATE, ZIP): St. Louis, MO 63141

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSES: PCBs (TO-4) [illegible]

PAGE 1 OF 1

[X] STANDARD REPORT DELIVERY
[ ] EXPEDITED REPORT DELIVERY (surcharge)
Date Due

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	PCBs (TO-4)									REMARKS
9/10/99	1856		AIR-P-5			X		X			-						
9/10/99	1930		AIR-P-6			X		X									
9/11/99	0938		AIR-P-7			X		X									
9/11/99	0957		AIR-P-8			X		X									
9/11/99	1125		AIR-P-9			X		X									
9/11/99	1106		AIR-P-10			X		X									
9/11/99	1022		AIR-P-11			X		X									
9/11/99	1033		AIR-P-12			X		X									
9/11/99	1229		AIR-P-13			X		X									
9/11/99	1700		AIR-P-FB			X		X									Field Blank

289A-6

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	9/13/99	0830						
RECEIVED BY: (SIGNATURE) FedEx AB# 812789433620	9/13/99	0830	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS:
			[ ] YES [ ] NO			

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FedEx USA Airbill Tracking Number 784433620

Form I.D. No. 0200

1 From Please print and press hard

Date 9/13/99 Sender's FedEx Account Number 1187-9587-3

Sender's Name Alan J Cork Phone (314) 842-4550

Company O'Brien & Gere Engineers

Address 5000 Cedar Plaza Parkway Suite 211 Dept./Floor/Suite/Room

City St. Louis State MO ZIP 63128

2 Your Internal Billing Reference First 24 characters will appear on invoice. 23548.070.001

3 To

Recipient's Name Lab Receiving Phone (912) 354-7858

Company Savannah Laboratories

Address 5102 LaRoche Avenue Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

To "HOLD" at FedEx location, print FedEx address here

City Savannah State GA ZIP 31404

Questions? Call 1·800·Go·FedEx® (800-463-3339)
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By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.

4a Express Package Service **Packages up to 150 lbs.** Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day* — Second business day
- [ ] FedEx Express Saver* — Third business day

* FedEx Letter Rate not available. Minimum charge: One pound rate.

4b Express Freight Service **Packages over 150 lbs.** Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation

5 Packaging * Declared value limit $500

- [ ] FedEx Letter*
- [ ] FedEx Pak*
- [X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

- [ ] Saturday Delivery — Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] Sunday Delivery — Available for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods cannot be shipped in FedEx packaging.

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below.

- [X] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. ____ Exp. Date ____

Total Packages	Total Weight	Total Declared Value†	
1	33	$ .00	FedEx Use Only

† Our liability is limited to $100 unless you declare a higher value. See back for details.

8 Release Signature Sign to authorize delivery without obtaining signature

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

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289A-7

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

[X] 5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
[ ] 2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (904) 878-3994 Fax: (904) 878-9504
[ ] 414 SW 12th Avenue, Deerfield Beach, FL 33442 Phone: (954) 421-7400 Fax: (954) 421-2584
[ ] 900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
[ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049
[ ] 100 Alpha Drive, Suite 110, Destrehan, LA 70047 Phone: (504) 764-1100 Fax: (504) 725-1163

PROJECT REFERENCE: Solutia Sauget Area 1
PROJECT NO.: 23516.070.001
P.O. NUMBER: Direct Bill to Solutia
PROJECT LOC. (State): IL
SAMPLER(s) NAME: Alan Cook
PHONE: (314) 547 [illegible]
FAX: (314) 547 3266
CLIENT NAME: Solutia Inc / [illegible]
CLIENT PROJECT MANAGER: [illegible] / Alan Cook
CLIENT ADDRESS (CITY, STATE, ZIP): St Louis, MO 63141

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc)

REQUIRED ANALYSES: VOCs (TO-1)

PAGE 1 OF 3

[X] STANDARD REPORT DELIVERY
[ ] EXPEDITED REPORT DELIVERY (surcharge)
Date Due

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	VOCs (TO-1)	REMARKS
9/10/99	1728		AIR-V-1 Tube-1			X		X	
	1807		AIR-V-2			X		X	
	1819		AIR-V-3			X		X	
	1815		AIR-V-4			X		X	
	1910		AIR-V-5			X		X	
	1928		AIR-V-6			X		X	
	1500		AIR-V-FB			X		X	
	1728		AIR-V-1 Tube-2			X		Hold - Analyze Only If Breakthrough on Tube 1	
	1807		AIR-V-2			X			
	1919		AIR-V-3			X			
	1845		AIR-V-4			X			
	1910		AIR-V-5			X			
	1928		AIR-V-6			X			

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
A. Cook	9/13/99	0830						
RECEIVED BY: (SIGNATURE) Fed Ex AB# 8127894335594	9/13/99	0830	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS
			[ ] YES [ ] NO			

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CLIENTS FIELD COPY

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

[X] LaRoche Avenue, Savannah, GA 31404	Phone: (912) 354-7858	Fax: (912) 352-0165
[ ] 2846 Industrial Plaza Drive, Tallahassee, FL 32301	Phone: (904) 878-3994	Fax: (904) 878-9504
[ ] 414 SW 12th Avenue, Deerfield Beach, FL 33442	Phone: (954) 421-7400	Fax: (954) 421-2584
[ ] 900 Lakeside Drive, Mobile, AL 36693	Phone: (334) 666-6633	Fax: (334) 666-6696
[ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634	Phone: (813) 885-7427	Fax: (813) 885-7049
[ ] 100 Alpha Drive, Suite 110, Destrehan, LA 70047	Phone: (504) 764-1100	Fax: (504) 725-1163

PROJECT REFERENCE: Solutia Sauget Area 1
PROJECT NO.: 23518.070.001
P.O. NUMBER: Direct Bill To Solutia
PAGE 2 OF 3

PROJECT LOC. (State): IL
SAMPLER(s) NAME: Bill Wright, Alan Cook, C.L. Neumeier
PHONE: (314) 842-1550
FAX: (314) 842-3206

CLIENT NAME: Solutia Inc / O'Brien & Gere
CLIENT PROJECT MANAGER: Solutia - Kimberly Perry; OBG - Alan Cook

CLIENT ADDRESS (CITY, STATE, ZIP): St Louis MO 63141

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc)

REQUIRED ANALYSES: VOC (TO17); VOC (Cool)

[X] STANDARD REPORT DELIVERY
[ ] EXPEDITED REPORT DELIVERY (surcharge)
Date Due

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	VOC (TO17)	VOC (Cool)									REMARKS
9/11/99	0913		AIR-V-7 Tube 1			X		X										
9/11/99	1004		AIR-V-8			X		X										
9/11/99	1125		AIR-V-9			X		X										
9/11/99	1107		AIR-V-10			X		X										
9/11/99	1018		AIR-V-11			X		X										
9/11/99	1031		AIR-V-12			X		X										
9/11/99	1228		AIR-V-13			X		X										
9/11/99	1545		Trip Blank	X					X									
9/11/99	0913		AIR-V-7 Tube 2			X		Hold Analyze Only If Breakthrough on Tube 1										
9/11/99	1004		AIR-V-8			X												
9/11/99	1125		AIR-V-9			X												
9/11/99	1107		AIR-V-10			X												
9/11/99	1018		AIR-V-11			X												

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	9/13/99	0830						
RECEIVED BY: (SIGNATURE) Fed Ex AB# 812769133594	9/13/99	0830	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS:
			[ ] YES [ ] NO			

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& ENVIRONMENTAL SERVICES, INC.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

[X] 5102 LaRoche Avenue, Savannah, GA 31404		Phone: (912) 354-7858	Fax: (912) 352-0165
[ ] 2846 Industrial Plaza Drive, Tallahassee, FL 32301		Phone: (904) 878-3994	Fax: (904) 878-9504
[ ] 414 SW 12th Avenue, Deerfield Beach, FL 33442		Phone: (954) 421-7400	Fax: (954) 421-2584
[ ] 900 Lakeside Drive, Mobile, AL 36693		Phone: (334) 666-6633	Fax: (334) 666-6696
[ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634		Phone: (813) 885-7427	Fax: (813) 885-7049
[ ] 100 Alpha Drive, Suite 110, Destrehan, LA 70047		Phone: (504) 764-1100	Fax: (504) 725-1163

PROJECT REFERENCE: Solutia Sauget Area 1
PROJECT NO.: 23518.070.001
P.O NUMBER: Direct Billing Solutia
PROJECT LOC. (State): IL
SAMPLER(s) NAME: Bill Wornell, Alan Cork and N[illegible]
PHONE: ([illegible]) 642 1550
FAX: ([illegible]) 642-32[illegible]
CLIENT NAME: Solutia Inc / O'Brien & Gere
CLIENT PROJECT MANAGER: Solutia - Kimberly Perry / OBG Alan Cork
CLIENT ADDRESS (CITY, STATE, ZIP): St. Louis Mo 63141

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc)

REQUIRED ANALYSES: VOC (TO1)

PAGE 3 OF 3

[X] STANDARD REPORT DELIVERY
[ ] EXPEDITED REPORT DELIVERY (surcharge)
Date Due:

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED	REMARKS
9/11/99	1031		AIR-V-12 Tube 2			X		Hold - Analyze Only If Breakthrough	on Tube 1
9/11/99	1228		AIR-V-13 Tube 2			X		" "	"

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	9/13/99	0830						

RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
FedEx AB# 812 7894 3354	9/13/99	0830						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS:
			[ ] YES [ ] NO			

CLIENTS FIELD COPY

FedEx USA Airbill Tracking Number

1 From Please print and press hard

Date 9/13/99 Sender's FedEx Account Number 1187-9587-3

Sender's Name Alan Cork Phone (314) 842-4550

Company O'Brien & Gere

Address 5000 Cedar Plaza Parkway Suite 211 Dept./Floor/Suite/Room

City St. Louis State Mo ZIP 63128

2 Your Internal Billing Reference First 24 characters will appear on invoice 23548.070.001

3 To

Recipient's Name Lab Receiving Phone (912) 354-7858

Company Savannah Laboratories

Address 5102 LaRoche Ave. Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes

To "HOLD" at FedEx location, print FedEx address here

City Savannah State GA ZIP 31404

Questions? Call 1·800·Go·FedEx® (800-463-3339)
Visit our Web site at www.fedex.com

By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.

4a Express Package Service — Packages up to 150 lbs. Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day* — Second business day
- [ ] FedEx Express Saver* — Third business day

* FedEx Letter Rate not available. Minimum charge: One pound rate

4b Express Freight Service — Packages over 150 lbs. Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation:

5 Packaging — * Declared value limit $500

- [ ] FedEx Letter*
- [ ] FedEx Pak*
- [X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

- [ ] Saturday Delivery — Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] Sunday Delivery — Available for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked

- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods cannot be shipped in FedEx packaging.

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below

- [X] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages	Total Weight	Total Declared Value†	
1	10	$ .00	FedEx Use Only

†Our liability is limited to $100 unless you declare a higher value. See back for details.

8 Release Signature Sign to authorize delivery without obtaining signature

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

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CHAIN OF CUSTODY SAMPLER'S SIGNATURE [signature]

CO.Name: O'Brien & Gere Engineers Contact Name: Alan Cork

Address: 5000 Cedar Plaza Pkwy Project Name: Solutia Sauget Area 1

St. Louis, Missouri 63128 PO#: Direct Bill To Solutia

Phone #: 314/842/4550

Total No. of Containers: 6

Analysis Wanted: Dioxin In Air (TO-9)

STA No.	Date	Time	Comp	Grab	Sample I.D.#	#of Cont.						Remarks - Preservation
	9/10/99	1725	✓		AIR-D-1	1 PUF						Cool
	9/10/99	1802	✓		AIR-D-2	1 PUF						
	9/10/99	1816	✓		AIR-D-3	1 PUF						
	9/10/99	1843	✓		AIR-D-4	1 PUF						
	9/10/99	1902	✓		AIR-D-5	1 PUF						
	9/10/99	1925	✓		AIR-D-6	1 PUF						

289A-12

Relinquished By/Sign.	Date/Time	Received By/Sign.	Relinquished By/Sign.	Date/Time	Received By/Sign.
Alan Cork / [signature]	9/13/99 / 0830	FedEx AB# 812789433631			
Relinquished By/Sign.	Date/Time	Received By/Sign.	Relinquished By/Sign.	Date/Time	Received By/Sign.

Received for Laboratory By/Signature	Date/Time	Send Samples To: Triangle Laboratories of RTP, Inc. 801 Capitola Drive Durham, North Carolina 27713

COC/DLH REVISION 5/23/94

.of 1

CHAIN OF CUSTODY

SAMPLER'S SIGNATURE [signature]

CO.Name: O'Brien & Gere Engineers Contact Name: Alan Cork

Address: 5000 Cedar Plaza Pkwy Project Name: Solutia Sauget Area 1

St. Louis, Missouri 63128 PO#: Direct Bill to Solutia

Phone #: 314/842/4550

Total No. of Containers: 9

Analysis Wanted: Dioxin In Air (TO-9)

STA No.	Date	Time	Comp	Grab	Sample I.D.#	#of Cont.							Remarks – Preservation
	9/11/99	0944	✓		AIR-D-7	1 PUF							Cool
	9/11/99	0955	✓		AIR-D-8	1 PUF							
	9/11/99	0944	✓		AIR-D-9	1 PUF							
	9/11/99	1104	✓		AIR-D-10	1 PUF							
	9/11/99	1019	✓		AIR-D-11	1 PUF							
	9/11/99	1035	✓		AIR-D-12	1 PUF							
	9/11/99	1231	✓		AIR-D-13	1 PUF							
	9/11/99	1500	✓		AIR-D-FB	1 PUF							, Field Blank
	9/11/99				Temperature Blank	1 Vial							

289A-13

Relinquished By/Sign.	Date/Time	Received By/Sign.	Relinquished By/Sign.	Date/Time	Received By/Sign.
Alan Cork / [signature]	9/13/99/0830	FedEx AB# 812789433631			
Relinquished By/Sign.	Date/Time	Received By/Sign.	Relinquished By/Sign.	Date/Time	Received By/Sign.

Received for Laboratory By/Signature	Date/Time	Send Samples To:
		Triangle Laboratories of RTP, Inc. 801 Capitola Drive Durham, North Carolina 27713

FedEx. USA Airbill Tracking Number 7894 3363 1

1 From Please print and press hard

Date: 9/13/99 Sender's FedEx Account Number: 1187-9587-3

Sender's Name: Alan J Cork Phone: (314) 842-4550

Company: O'Brien & Gere Engineers

Address: 5000 Cedar Plaza Parkway Suite 211 Dept./Floor/Suite/Room

City: St. Louis State: MO ZIP: 63~~[illegible]~~128

2 Your Internal Billing Reference First 24 characters will appear on invoice: 23548.070.001

3 To

Recipient's Name: Sample Receiving Phone: ( )

Company: Triangle Laboratories of RTP, Inc.

Address: 801 Capitola Drive
We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

To "HOLD" at FedEx location, print FedEx address here.

City: Durham State: NC ZIP: 27713

Questions? Call 1·800·Go·FedEx® (800-463-3339)
Visit our Web site at www.fedex.com

By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.

Sender's Copy

4a Express Package Service — *Packages up to 150 lbs.* Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day* — Second business day
- [ ] FedEx Express Saver* — Third business day

*FedEx Letter Rate not available. Minimum charge: One-pound rate

4b Express Freight Service — *Packages over 150 lbs.* Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

*Call for Confirmation:

5 Packaging — *Declared value limit $500

- [ ] FedEx Letter*
- [ ] FedEx Pak*
- [x] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

- [ ] Saturday Delivery — Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] Sunday Delivery — Available for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [x] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods cannot be shipped in FedEx packaging.

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below

- [x] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages	Total Weight	Total Declared Value†
1	32	$ .00

†Our liability is limited to $100 unless you declare a higher value. See back for details. FedEx Use Only

8 Release Signature Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

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Section 3.23

3.23. Pilot Test Sampling

3.23.1. Rationale/Design

Treatability pilot tests were conducted on wastes in order to identify any characteristics of these materials that would prevent their treatment using off-site incineration.

Waste treatability pilot tests for on-site thermal desorption were also planned. Although samples were collected for this effort, an appropriately permitted contractor was not identified to accept the samples.

Leachate treatability pilot testing was conducted to evaluate the appropriate combination of physical/chemical and/or biological treatment processes that are needed to achieve pretreatment requirements for discharge to the American Bottoms publicly owned treatment works (POTW). Leachate from Sites G and I was considered representative of leachate found in the fill areas.

Sediment treatability pilot tests for on-site thermal desorption and stabilization were also planned. However, a deviation (Section 3.23.4.1) was submitted and approved to cancel these plans, based on correspondence between Solutia and USEPA Region V.

Off-Site Waste Incineration – One composite organic waste sample was made from waste samples collected from one of the waste characterization borings installed at each fill area (Boring B3 on Site G, B3 on H, B2 on I, B4 on L, and B1 on N). Borings were selected by Roux Associates, Inc. based on review of boring logs from waste sampling. This sample was sent to one RCRA/TSCA-permitted, fixed-facility incinerator for waste profiling, material handling characterization, and evaluation of the feasibility of disposing of the waste material by off-site incineration. The sample was submitted to SafetyKleen in Coffeyville, Kansas. SafetyKleen in Coffeyville, Kansas is the only incineration facility permitted to accept dioxin-containing materials from RCRA-listed processes.

Leachate Treatment – Leachate treatability pilot tests were conducted on samples collected from Sites G and I to evaluate if pretreatment limits can be achieved prior to discharge to the American Bottoms POTW. One leachate sample was collected from Site I, and one leachate sample was collected from Site G using the two-inch-diameter well installed at each of these fill areas as part of the Waste Characterization Sampling Plan. As directed by USACE, these wells were stressed so that a representative leachate sample could be collected. Pumping was limited by constraints imposed by leachate storage and disposal requirements. Pilot treatability testing was conducted by the ADVENT Group, Brentwood, Tennessee.

3.23.2. Field Procedures

Prior to performing field work, Preparatory Inspection Meetings attended by a representative of each of the interested parties were completed (Section 3.23.4.2).

Fill Areas – The borings were advanced using conventional hollow-stem auger drilling methods. Samples were collected using a five-foot continuous sampler. The samples were selected for compositing by visual and PID analysis and placed into sealable five-gallon buckets for storage prior to compositing and shipment to treatment facilities. In cases where insufficient sample volume was recovered from the sampler, the drill cuttings were collected. This procedure was repeated over the approximate depth of waste/fill, based on field observations and boring logs from waste sampling. A grab sample from each site was used to make up a composite waste sample.

Leachate Sample – Leachate samples were collected generally following procedures outlined in Section 3.7.3. Wells were pumped at a rate that allowed continuous discharge without drying up the well, and sufficient volume was pumped to enable water from at least one foot away from the filter pack to be drawn into the well before a sample was collected. Approximately 80 gallons was purged from each well prior to sampling. The ADVENT Group was contacted to establish sample quantity and container requirements.

3.23.3. Documentation

Deviation to not perform sampling for both sediment thermal desorption and sediment stabilization is included in Section 3.23.3.1. Field logs generated are included in Record Book Nos. 2, 3, and 4 (Appendix D). Ground water sampling logs for the leachate sampling are included in Section 3.23.3.3. Chain-of-custody forms are included in Section 3.23.3.4.

Documentation for this task continues on the next page.

3.23.3.1. Change Orders and Deviation/Clarification Log

ccOBG

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION / COMPANY: DE Haverdink / O'Brien + Gere

DATE 03 Apr 00

HEALTH & SAFETY APPROVAL REQUIRED: YES: ________ NO: X

PROJECT NAME Solutia - Sauget Area I

PROJECT LOCATION Dead Creek, SfeM

WEATHER —

PRECIPITATION —

TEMPERATURE —

NUMBER OF HOURS WORKED —

NUMBER OF EMPLOYEES —

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT: TIME: MANPOWER: ETC.):
7. REMARKS:

(1) Pilot test sampling for sediments

(2) FSP #5.23

(3) Deviation based on conversations between Mike Light (Solutia) and Mike McAteer (USEPA).

(4) Pilot test sampling for on-site sediment thermal desorption and sediment stabilization will not be conducted

(5) N/A

(6) None

(7) None

cc: K. Perry 03APR00
USEPA e/700

DE Haverdink / DE Haverdink
PRINTED NAME / SIGNATURE OF PREPARER

Kimberly Perry / [signature] 4/3/00
PRINTED NAME / SIGNATURE ~~OF~~ SOLUTIA REP / DATE

03 Apr 00
DATE

PRINTED NAME / SIGNATURE OF USEPA REP / DATE

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

3.23.3.2. Preparatory Inspection Meeting Form

PREPARATORY INSPECTION MEETING

Conducted by/Company: DE Haverdink / O'Brien + Gere **Date:** 12 Apr 00
Project Name: Solutia - Sauget Area I **Task:** Pilot test sampling - Waste

1. Scheduled Work: see below
2. Equipment, Procedures, Personnel: " "
3. Ref. To App. Sec. of FSP/HASP: FSP # 5.23 HASP # 2.4
4. Issues that could arise and how to resolve: see below
5. Solutia comments: " "
6. EPA comments: " "

(1) Pilot test waste sampling
(2) Equip.: drill rig + drilling equip., 5-gal sealable buckets, PPE, monitoring equip.
Procedures: collect up to 3 x 5 gal buckets at each boring location; collect waste over total fill depth; locations as follows: G B3, H B3, I B2, L B4, N B1 (per Roux Assoc.); advance borings using hollow stem auger methods, collect samples using 5-ft continuous sampler, select waste for compositing by visual + PID analysis; ship sample for incineration treatability, hold sample for thermal desorb. treatability
Personnel: drilling → Harriss, samp. collection → OBG
(3) see above
(4) not enough recovery → perform another boring in adjacent location
(5) ~~none~~; requested maps of each boring location; buckets to be stored in field ofc. shed, labeled, pending shipment
(6) none

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Kimberly Perry	[signature]	Solutia
Chad McGrath	[signature]	Harriss
Tim Crank	[signature]	Harriss
Ken Lafferty	[signature]	Maverick
Nick Jenkins	[signature]	OBG

cc: K. Perry 4-12-00
USEPA @ 1745

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

DE Haverdink / [signature]
PRINTED NAME/ SIGNATURE OF PREPARER

12 Apr 00
DATE

PREPARATORY INSPECTION MEETING

Conducted by/Company: O'Brien & Gere **Date:** 25Apr00
Project Name: Solutia - Sauget Area 1 **Task:** Leachate well Sampling

1. Scheduled Work: Sample leachate wells located at sites G & I.
2. Equipment, Procedures, Personnel:
3. Ref. To App. Sec. of FSP/HASP: FSP 5.23 & 5.7.3 / HASP 2.6
4. Issues that could arise and how to resolve:
5. Solutia comments:
6. EPA comments:

(2) Peristaltic pumps, tubing, PID, 4-gas meter, sample containers, level C PPE, 55 gallon drums, water level probe, batteries

Procedures include measuring top of water table, monitoring air, insert tubing for 2 peristaltic pumps to 1.5' above bottom of well casing & connect through pumps to 55 gallon drums for discharge, pump ~~for the~~ until [redacted] 4.25 drums are filled, periodic monitoring of air up & down wind in the breathing zone, after [redacted] 1.25 drums are filled begin to fill sample containers, fill out ground water sample log sheet, send samples to Savannah for analyses attached & Triangle for Dioxin analysis, label & stage drums adjacent to leachate wells

Personnel include 2 OBG employees

(4) Issues that could arise include:
A) ground water exceeds suction capability of peristaltic - solution -> use either bailers or grundfos pump

ATTENDANCE: OVER ->

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
COLIN WELLENKAMP	Colin Wellenkamp	OBG
William E. Wright	William E. Wright	OBG
Nick Jenkins	Nick Jenkins	OBG
Ken Lafferty		Maverick
Kimberly Perry		Solutia

cc: K. Perry 25Apr00
USEPA 1830

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Tim Kilevers / [signature]
PRINTED NAME/ SIGNATURE OF PREPARER

25 Apr 00
DATE

(4) (continued)

(B) well goes dry — solution → record in log book & allow well to recover

(C) air monitoring exceeds level C threshold of 49.9 —
solution → turn off pumps & cover wells & barrells & monitor air up & down wind in the breathing zones, when monitoring results fall below required level begin pump operation & sampling

(5) none

(6) none

S0041012/OBRIEN MO

STL Savannah Laboratories

DATE/TIME PRINTED: 04.10.00/03:18PM

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165 • www.stlsavlab.com

Shipping Address: O'Brien & Gere
5000 Cedar Plaza Parkway Suite 211
St. Louis, MO 63128
ATTN: BILL WRIGHT

Phone No: 314/842-4550

Account No: 1187-9587-3

Date of Shipment: 04/10/00

Method of Shipment: FEP

Project Reference: SA1/SSP-Leachate Treatabilit

Project Site Location: IL

SAMPLE CONTAINER REQUEST FORM

AQUEOUS													
PRESERVATIVES	O	O	O	R	R	LB	B	O	O	O	G	LB	O
	L n/m amber glass w/TFE	L n/m amber glass w/TFE	L n/m amber glass w/TFE	500 mL m/m plastic	250 mL m/m plastic	40 mL vial w/TFE	500 mL m/m plastic	L n/m amber glass w/TFE	L n/m plastic	500 mL m/m plastic	250 mL m/m plastic	125 mL m/m amber glass w/TFE	L n/m plastic
NO. OF CONTAINERS SHIPPED	6	6	6	3	3	12	3	6	3	3	3	3	3
NO. OF CONTAINERS/SAMPLE	2	2	2	1	1	3	1	2	1	1	1	1	1
SET(S) OF TRIP BLANKS (3/SET)	-	.	.	.	.	1	.	.	.	.		.	
ANALYSIS	SVOC-8270	PCB-680	PEST-8081	METALS-6010	MERCURY ~~[illegible]~~ 7470A	VOC-8260	CYANIDE-9010	HERBICIDES-8151	BOD/SS	General analyses Sov/Tox/NO2/Cl/pH/color/conductivity	COD/TKN/NO3/NH3	TOC	TDS/VSS/ TDIS

Lab Pk Prep. by:

Lab Pk Checked by:

Quantity of Lab Pks. Shipped:

Proj Mgr: Angie Stewart

Coordinator: Christina Williams

Comments: MARK BOXES

It is the shipper's responsibility to ensure samples are maintained at the appropriate temperature during transit.

PRESERVATION COLOR CODE KEY

BLACK(BK)	MCACE	Contains Monochloroacetic Acid. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
RED(R)	HNO3	CAUTION! STRONG OXIDIZER! CONTAINS NITRIC ACID. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
GREEN(G)	H2SO4	CAUTION! CONTAINS SULFURIC ACID. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
BLUE(B)	NAOH	CAUTION! STRONG CAUSTIC! CONTAINS SODIUM HYDROXIDE. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
WHITE(W)	NONE	No preservatives added.
ORANGE(O)	NONE	No preservatives added.
TAN(T)	ZN-ACE	Contains Zinc Acetate. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
YELLOW(Y)	NA2SSO4	Contains Sodium Thiosulfate.
LT.BLUE(LB)	HCL	CAUTION! CONTAINS HYDROCHLORIC ACID. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
1	NAHSO4	
2	MEOH	
3	ASC-ACID	

DO NOT inhale vapors that may be caused from a chemical reaction between the preservative and sample. Collect sample in a well-ventilated area or use appropriate breathing apperatus. NEVER RINSE sample containers. If skin contact with preservatives occurs, flush exposed areas IMMEDIATELY.

3.23.3.3. Ground Water Logs

Leachate 2 Groundwater Sampling

O'BRIEN & GERE ENGINEERS, INC — Ground Water Sampling Log

Date:	7/17/00	Weather:	Partly Sunny
Site Name	Sweet-Site G	Well Number:	LEACH-G
Site Location	Sweet Area 1	Project Number:	23545
Personnel	Tim Tervesio Y Collin Wilkerson	Evacuation Method:	Grundfos Pump

Depth of Well * ~~29~~ 32ft ft.
Depth to Water * 14 ft.
Length of Water Column ____ ft.
Volume of Water in Well ____ gal.(s)
3X Volume of Water in Well ____ gal.(s)

Water Volume /ft. for:
2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 70-75 gal.(s)
Did well go dry? Yes ____ No X

*Measurements taken from [X] Top of Well Casing [ ] Top of Protective Casing ____ (Other, Specify)

Water parameters: Not Measured

Temperature Reading		pH Reading		Conductivity Reading	
		4.0 Standard			
		7.0 Standard		84 S Standard	
		10.0 Standard		1413 S Standard	
initial		initial		initial	
after ____ (gal.)		after ____ (gal.)		after ____ (gal.)	
after ____ (gal.)		after ____ (gal.)		after ____ (gal.)	
after ____ (gal.)		after ____ (gal.)		after ____ (gal.)	
after ____ (gal.)		after ____ (gal.)		after ____ (gal.)	
after ____ (gal.)		after ____ (gal.)		after ____ (gal.)	

Water Sample
Time Collected: 1500

Physical Appearance at Start		Physical Appearance at Sampling	
Color	Cloudy Brown	Color	Cloudy Brown
Odor	Yes	Odor	Yes
Turbidity (> 100 NTUs)	Not Analyzed	Turbidity (> 100 NTU's)	Not analyzed
Sheen/Free Product	Not Confirmed	Sheen/Free Product	Not Confirmed

Sample Parameters: None

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
1 gallon	plastic	25	No	ice			

Monitoring Well Integrity Checklist:

	Yes	No
Well identification number clearly marked?	X	
Well covers and locks in good condition and secure?	X	
Is the wel stand pipe vertically aligned and secure?	X	
Is the concrete pad and surface seal in good condition?	X	
Are soils surrounding the well pad eroded?		X
Is the PVC well casing in good condition? Steel	~~Yes~~	~~No~~
Is there standing water in the annular space between the well stand pipe and PVC casing? Steel	~~Yes~~	~~No~~
Is the stand pipe vented at the base to provide drainage? Not Observed	~~Yes~~	~~No~~
Does the total depth of the well sounded correspond with original well completion depths?	X	

NOTES
Top of casing elevation: ____
Depth to Ground Water: ____
Ground Water Elevation: ____

Lezchite 2 Groundwater Sampling

O'BRIEN & GERE ENGINEERS, INC. — Ground Water Sampling Log

Date: 7/19/00
Site Name: Superfund Site I
Site Location: Superfund Area I
Personnel: T. Tedesco & C. Welkenamp

Weather: Partly Sunny
Well Number: Leach I
Project Number: 23548
Evacuation Method: Grundfos Pump

Depth of Well * ~30 ft.
Depth to Water * ~16 ft.
Length of Water Column ____ ft.
Volume of Water in Well ____ gal.(s)
3X Volume of Water in Well ____ gal.(s)

Water Volume /ft. for:
2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 70 gal.(s)
Did well go dry? Yes X No ____

*Measurements taken from [X] Top of Well Casing [ ] Top of Protective Casing [ ] (Other, Specify)

Water parameters: Not Measured

Temperature Reading		pH Reading		Conductivity Reading	
		~~4.0 Standard~~		84 S Standard	
		7.0 Standard		1413 S Standard	
		10.0 Standard			
initial		initial		initial	
after ____ (gal.)		after ____ (gal.)		after ____ (gal.)	
after ____ (gal.)		after ____ (gal.)		after ____ (gal.)	
after ____ (gal.)		after ____ (gal.)		after ____ (gal.)	
after ____ (gal.)		after ____ (gal.)		after ____ (gal.)	
after ____ (gal.)		after ____ (gal.)		after ____ (gal.)	

Water Sample: Time Collected: 1115

Physical Appearance at Start
Color: Cloudy Brown
Odor: Yes
Turbidity (> 100 NTUs): Not analyzed
Sheen/Free Product: Not confirmed

Physical Appearance at Sampling
Color: Cloudy Brown/Black
Odor: Yes
Turbidity (> 100 NTU's): Not Analyzed
Sheen/Free Product: Not confirmed

Sample Parameters: None

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
1 gallon	plastic	25	no	ice			

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.................Yes ____ No X
Well covers and locks in good condition and secure?.................Yes X No ____
Is the well stand pipe vertically aligned and secure?.................Yes X No ____
Is the concrete pad and surface seal in good condition?.................Yes X No ____
Are soils surrounding the well pad eroded?.................Yes ____ No X
Is the PVC well casing in good condition? Steel ....~~Yes~~ ~~No~~
Is there standing water in the annular space between the well stand pipe and PVC casing? Steel ~~Yes~~ ~~No~~
Is the stand pipe vented at the base to provide drainage? Not Observed ~~Yes~~ ~~No~~
Does the total depth of the well sounded correspond with original well completion depths?.........Yes X No ____

NOTES
Top of casing elevation: ____
Depth to Ground Water: ____
Ground Water Elevation: ____

3.23.3.4. Chain-of-Custody Forms

Figure 1. ***Example chain-of-custody***

Project Name: Support Sampling . Sauget Area 1 Site. Solutia Inc.
Job No. 23548
Sheet 1 of 1

Office: St Louis, MO 63127
s: 2350 Weber Hill Rd.
Phone: 314 342-4550

CHAIN OF CUSTODY

Cooler Temperature ______

CLIENT: Solutia, Inc. LOCATION: Sauget Area 1	COLLECTED BY: DE Haverlink (Signature) DE Haverlink

SAMPLE DESCRIPTION/LOCATION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED[3]	Sample Preservation
WI - COMP	4/17/00	1730	waste/soil	comp.	1	*	cool
* waste disposal per Lande Richards & Roux Associates, Inc. 1-800-957-7689							

[1]Matrix = Ground water. surface water. sediment. biota   [3]VOC - USEPA 8260. 8270. 6010   [2]Type = grab. composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: DE Haverlink of: O'Brien + Gere	4/17/00	1900	Courier Name and Airbill Number: Fed Ex 8187 0377 9288 *Attach delivery/courier receipt to Chain of Custody	4/17/00	1900
Relinquished by: of:			Received by: of:		

299A-1

299A-2

FedEx. USA Airbill FedEx Tracking Number 8187 0377 9288

Sender's Copy

1 From Please print and press hard

Date 4-17-00 Sender's FedEx Account Number 1187-9587-3

Sender's Name DE Haverdink Phone (314) 842-4550

Company O'BRIEN & GERE

Address 12250 WEBER HILL RD Dept./Floor/Suite/Room

City SAINT LOUIS State MO ZIP 63127

2 Your Internal Billing Reference 23548.080.001

3 To

Recipient's Name Bill Waltrip Phone ( )

Company Safety Kleen

Address N. Hwy 169

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Coffeyville Industrial Park Dept./Floor/Suite/Room

City Coffeyville State KS ZIP 67337

NEW Peel and Stick FedEx USA Airbill

See back for application instructions.

Questions? Call 1·800·Go·FedEx® (800-463-3339)

Visit our Web site at www.fedex.com

By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.

4a Express Package Service — Packages up to 150 lbs. Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day* — Second business day
- [ ] FedEx Express Saver* — Third business day

*FedEx Envelope/Letter Rate not available. Minimum charge: One-pound rate

4b Express Freight Service — Packages over 150 lbs. Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

*Call for Confirmation

5 Packaging — *Declared value limit $500

- [ ] FedEx Envelope/Letter*
- [ ] FedEx Pak*
- [x] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling — Include FedEx address in Section 3

- [ ] SATURDAY Delivery — Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] SUNDAY Delivery — Available for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [x] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ___ x ___ kg

Dangerous Goods cannot be shipped in FedEx packaging.

- [ ] Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below.

- [x] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages	Total Weight	Total Declared Value†	FedEx Use Only
1	8	$ .00	

†Our liability is limited to $100 unless you declare a higher value. See back for details.

8 Release Signature Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

359

01('28017

STL Savannah Laboratories
a division of Severn Trent Laboratories, Inc.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECO

- ○ 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
- ○ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (850) 878-3994 — Fax: (850) 878-9504
- ○ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
- ○ 6712 Benjamin Rd., Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049

PROJECT REFERENCE	SAUGET AREA 1
PROJECT NO.	23548
PROJECT LOCATION (STATE)	IL
PAGE	1 OF 2
STL (LAB) PROJECT MANAGER	
P.O. NUMBER	DIRECT BILL TO SOLUTIA
CONTRACT NO.	
CLIENT (SITE) PM	K. PERRY
CLIENT PHONE	
CLIENT FAX	
CLIENT NAME	SOLUTIA, INC.
CLIENT EMAIL	
CLIENT ADDRESS	ST. LOUIS, MO
COMPANY CONTRACTING THIS WORK (if applicable):	
STANDARD REPORT DELIVERY	X
DATE DUE	
EXPEDITED REPORT DELIVERY (SURCHARGE)	○
DATE DUE	
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:	

MATRIX TYPE / REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)	VOC's 8260B	Herb's 8151A	PCB's 8082	Pest's 8081	SVOC's 8270C	BOD SS	Mercury 7470A	Cyanide 9012B	Metals 6010A	TDS, VSS TDS	REMARKS
								HCL	COOL			COOL			NaOH	COOL		
7-25-00	1500	LEACH-I-1	G	X				3	2	2	2	2	1	1	1	1	1	
7-25-00	1545	BR-I	G	X				3										
~~7-25-00~~																		
7-25-00	—	TEMP BLANK		X														
7-25-00	—	TRIP BLANK		X				3										

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			[signature]	7-25-00	1900			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
			FEDEX 816870379 1610	7-25-00	1900			

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
			YES NO			

299A-3

CLIENTS FIELD COPY

STL Savannah Laboratories
a division of Severn Trent Laboratories, Inc.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECO

5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (9 12) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (850) 878-3994 Fax: (850) 878-9504
900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
6712 Benjamin Rd., Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049

PROJECT REFERENCE: SAUGET AREA 1	PROJECT NO.: 23544	PROJECT LOCATION (STATE): IL	PAGE 2 OF 2
STL (LAB) PROJECT MANAGER:	P.O. NUMBER:	CONTRACT NO.:	STANDARD REPORT DELIVERY: X; DATE DUE:
CLIENT (SITE) PM: K. PERRY	CLIENT PHONE:	CLIENT FAX:	EXPEDITED REPORT DELIVERY (SURCHARGE); DATE DUE:
CLIENT NAME: SOLUTIA, INC.	CLIENT EMAIL:		NUMBER OF COOLERS SUBMITTED PER SHIPMENT:
CLIENT ADDRESS: ST. LOUIS, MO			
COMPANY CONTRACTING THIS WORK (if applicable):			

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE; AQUEOUS (WATER); SOLID OR SEMISOLID; AIR; NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES: TOC (HCl); [illegible]; SC[illegible]

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	C/G	AQUEOUS	SOLID	AIR	NONAQUEOUS	TOC	[illegible]	SC[illegible]	REMARKS
4-25-00	1500	LEACH-I-1	G	X				1	1	1	

NUMBER OF CONTAINERS SUBMITTED

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			[signature]	4-25-00	1700			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
			FEDEX: 8187 0579 1510	4-25-00	1700			

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
			YES / NO			

299A-4

CLIENTS FIELD COPY

FedEx USA Airbill Tracking Number 0107 177 1510

1 From Please print and press hard

Date 4-25-00 Sender's FedEx Account Number 1187-9587-3

Sender's Name Colin Wellenkamp Phone (314) 842-4550

Company O'BRIEN & GERE

Address 12250 WEBER HILL RD

Dept./Floor/Suite/Room

City SAINT LOUIS State MO ZIP 63127

2 Your Internal Billing Reference 23548.080.001

First 24 characters will appear on invoice

3 To

Recipient's Name BETSY BEAUBEAUCHAMP Phone (912) 354-7858

Company SAVANNAH LABRATORIES

Address 5102 LAROCHE AVE

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

City SAVANNAH State GA ZIP 31404

NEW Peel and Stick FedEx USA Airbill

See back for application instructions.

Questions? Call 1·800·Go·FedEx® (800-463-3339)

Visit our Web site at www.fedex.com

By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.

0126730793

Sender's Copy

4a Express Package Service Packages up to 150 lbs.

[x] FedEx Priority Overnight — Next business morning
[ ] FedEx Standard Overnight — Next business afternoon
[ ] FedEx First Overnight — Earliest next business morning delivery to select locations
[ ] FedEx 2Day* — Second business day
[ ] FedEx Express Saver* — Third business day

*FedEx Envelope/Letter Rate not available. Minimum charge: One pound rate

4b Express Freight Service Packages over 150 lbs.

[ ] FedEx 1Day Freight* — Next business day
[ ] FedEx 2Day Freight — Second business day
[ ] FedEx 3Day Freight — Third business day

*Call for Confirmation

5 Packaging *Declared value limit $500

[ ] FedEx Envelope/Letter*
[ ] FedEx Pak*
[x] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling Include FedEx address in Section 3

[ ] SATURDAY Delivery
[ ] SUNDAY Delivery
[ ] HOLD Weekday at FedEx Location
[ ] HOLD Saturday at FedEx Location

Does this shipment contain dangerous goods?

[x] No
[ ] Yes — As per attached Shipper's Declaration
[ ] Yes — Shipper's Declaration not required
[ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Dangerous Goods cannot be shipped in FedEx packaging

[ ] Cargo Aircraft Only

7 Payment Bill to:

[x] Sender — Acct. No. in Section 1 will be billed
[ ] Recipient
[ ] Third Party
[ ] Credit Card
[ ] Cash/Check

FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages 1 | Total Weight 5 | Total Declared Value† $ .00

†Our liability is limited to $100 unless you declare a higher value. See back for details. FedEx Use Only

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By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

359

PULL AND RETAIN THIS COPY BEFORE AFFIXING TO THE PACKAGE

299A-5

CLIENT CHAIN OF CUSTODY	SAMPLER'S SIGNATURE [signature]	Project/Quote 04998/9900001069

From (1): Solutia,Inc.
575 Maryville Center Drive
St. Louis, MO 63141

Project (1): Sauget Area 1 Support Sampling

(SOL05 /FMS)

Contact: Ms. Kimberly Perry
Phone: 314-393-3721
Fax: 314-674-8957
P.O.# (1): ____________

Data to be reported to the state of MO.

Analysis Wanted (2): Dioxin (0625)

Total Number of Containers: 4

Turn Around Time (In Calendar Days):

Sample ID (3)	Date / Time	Preservation (4)	Matrix	Sample Amt.						Remarks
Leach-I-1	04-25-00 1500	$Na_2S_2O_3$	water	2, 1-liter						
BR-I	04-25-00 1545	$Na_2S_2O_3$	water	2, 1-liter						
Temp. Blank	04-25-00		water							

Relinquished By/Sign.	Date/Time	Received By/Sign.	Relinquished By/Sign.	Date/Time	Received By/Sign.
Nicolas E. Jenkins	04-25-00	Fedex 8170 9423 1749			

Received for Laboratory By/Signature	Date/Time	
		Send Samples to: Triangle Laboratories, Inc. Attn: Sample Custodian 801 Capitola Drive Durham, NC 27713 USA Phone: (919) 544-5729 • Fax: (919) 544-5491

Directions:
(1) Provide and/or correct client and project information.
(2) Verify analysis, check approriate boxes for each sample.
(3) Enter the sample ID to be used when reporting the samples.
(4) Please indicate the preservation used for each sample.

299A-6

USA Airbill

Date 4-25-00

Sender's FedEx Account Number 1187-9587-3

Sender's Name Colin Wellenkamp

Phone (314) 842-4550

Company O'BRIEN & GERE

Address 5000 CEDAR PLAZA PKWY STE 211

Dept/Floor/Suite/Room

City SAINT LOUIS State MO ZIP 63128

Your Internal Billing Reference 23548.080.001

First 24 characters will appear on invoice

Recipient's Name FRANK STEVENS

Phone (919) 544-5729

Company TRIANGLE LABORTIES

Address 801 CAPITOLA DR

We cannot deliver to PO boxes or PO ZIP codes

Dept/Floor/Suite/Room

HOLD at FedEx location, print FedEx address here

City DURHAM State NC ZIP 27713

NEW Peel and Stick FedEx USA Airbill

See back for application instructions.

Questions? Call 1·800·Go·FedEx® (800-463-3339)

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0119392504

4a Express Package Service — Packages up to 150 lbs.

[X] FedEx Priority Overnight — Next business morning
[ ] FedEx Standard Overnight — Next business afternoon
[ ] FedEx First Overnight — Earliest next business morning delivery to select locations
[ ] FedEx 2Day* — Second business day
[ ] FedEx Express Saver* — Third business day

* FedEx Letter Rate not available. Minimum charge: One pound rate

4b Express Freight Service — Packages over 150 lbs.

[ ] FedEx 1Day Freight* — Next business day
[ ] FedEx 2Day Freight — Second business day
[ ] FedEx 3Day Freight — Third business day

* Call for Confirmation

5 Packaging — * Declared value limit $500

[ ] FedEx Letter*
[ ] FedEx Pak*
[X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

[ ] Saturday Delivery — Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
[ ] Sunday Delivery — Available for FedEx Priority Overnight to select ZIP codes
[ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
[ ] HOLD Saturday at FedEx Location — Available for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods?

[X] No
[ ] Yes — As per attached Shipper's Declaration
[ ] Yes — Shipper's Declaration not required
[ ] Dry Ice

Dangerous Goods cannot be shipped in FedEx packaging

[ ] Cargo Aircraft Only

7 Payment Bill to:

[X] Sender — Acct. No. in Section 1 will be billed
[ ] Recipient
[ ] Third Party
[ ] Credit Card
[ ] Cash/Check

FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages	Total Weight	Total Declared Value†
1	33	$ .00

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299A-7

Savannah Laboratories
a division of Severn Trent Laboratories, Inc.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECC

5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (850) 878-3994 — Fax: (850) 878-9504
900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
6712 Benjamin Rd., Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049

PROJECT REFERENCE: Sauget Area 1	PROJECT NO.: 2354Y	PROJECT LOCATION (STATE): IL
STL (LAB) PROJECT MANAGER:	P.O. NUMBER: Direct Bill to Solutia	CONTRACT NO.:
CLIENT (SITE) PM: K. Perry	CLIENT PHONE: 314 542 4550	CLIENT FAX: 314-542 1266
CLIENT NAME: Solutia, Inc.	CLIENT EMAIL:	
CLIENT ADDRESS: St. Louis, MO.		
COMPANY CONTRACTING THIS WORK (if applicable):		

PAGE 1 OF 2

STANDARD REPORT DELIVERY: Ø — DATE DUE ______
EXPEDITED REPORT DELIVERY (SURCHARGE): O — DATE DUE ______
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE; AQUEOUS (WATER); SOLID OR SEMISOLID; AIR; NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES: VOC 8260B; [illegible]; [illegible]; [illegible]; [illegible]; METALS [illegible]; MERCURY 7470A; CYANIDE [illegible]; COD/[illegible]; TOC
Preservation: HCL; [illegible]; [illegible]; cool; cool; HNO_3; HNO_3; NaOH; [illegible]; HCl — COOL

NUMBER OF CONTAINERS SUBMITTED

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	C/G	AQUEOUS	SOLID	AIR	NONAQ.	VOC 8260B	[illegible]	[illegible]	[illegible]	[illegible]	METALS	MERCURY 7470A	CYANIDE	COD	TOC	REMARKS
4-26-00		LEACH-GW	G	X				3	2	2	2	2	1	1	1	1	1	
4-26-00	—	TEMP BLANK		X														
4-26-00	—	TRIP BLANK		X				3										

299A-8

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			[signature]	4-26-00	1600 ~~1430~~			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
			~~8170 9423 1743~~ FEDEX: 8170 0379 1473	4-26-00	1600 ~~1430~~			

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
			YES NO			

CLIENTS FIELD COPY

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Savannah Laboratories
a division of Severn Trent Laboratories, Inc.

5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (850) 878-3994 — Fax: (850) 878-9504
900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
6712 Benjamin Rd., Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049

PROJECT REFERENCE: SAUGET - AREA 1	PROJECT NO.: 23544	PROJECT LOCATION (STATE): IL	PAGE 2 OF 2
STL (LAB) PROJECT MANAGER:	P.O. NUMBER: DIRECT BILL TO SOLUTIA	CONTRACT NO.:	STANDARD REPORT DELIVERY: X — DATE DUE:
CLIENT (SITE) PM: K. PERRY	CLIENT PHONE: 1-314 6?? 4???	CLIENT FAX: 314-??? 7716	EXPEDITED REPORT DELIVERY (SURCHARGE) — DATE DUE:
CLIENT NAME: SOLUTIA, INC.	CLIENT EMAIL:		
CLIENT ADDRESS: ST. LOUIS, MO.			NUMBER OF COOLERS SUBMITTED PER SHIPMENT:
COMPANY CONTRACTING THIS WORK (if applicable):			

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE; AQUEOUS (WATER); SOLID OR SEMISOLID; AIR; NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES: SO4, NO3, Cl, pH, Cond (CHECK) | BOD 5 | TSS, TDS — ICOOL-1

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G)	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	SO4, NO3, Cl, pH, Cond	BOD 5	TSS, TDS	REMARKS
4-26-00		LEACH-G-1	G	X				1	1	1	

299A-9

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			[signature]	4-26-00	~~1400~~ 1600			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
			FEDEX: 8187 0379 1473	4-26-00	~~1430~~ 1600			

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
			YES / NO			

CLIENTS FIELD COPY

SDA22

FedEx USA Airbill Tracking Number 8187 0379 1473 Form ID No. 0215

299A-10

1 From Please print and press hard

Date 4-26-00 Sender's FedEx Account Number 1187-9587-3

Sender's Name Colin Wellenkamp Phone (314) 842-4550

Company O'BRIEN & GERE

Address 12250 WEBER HILL RD

City SAINT LOUIS State MO ZIP 63127

2 Your Internal Billing Reference 23548.080-001

3 To Recipient's Name Angie Stewart ~~BETSY BEAUBEAUCHAMP~~ Phone (912) 354-7858

Company SAVANNAH LABRATORIES

Address 5102 LAROCHE AVE

City SAVANNAH State GA ZIP 31404

See back for application instructions

Questions? Call 1·800·Go·FedEx (800 463 3339)

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4a Packages up to 150 lbs.

[x] FedEx Priority Overnight Next business morning
[ ] FedEx Standard Overnight Next business afternoon
[ ] FedEx First Overnight Earliest next business morning delivery to select locations
[ ] FedEx 2Day Second business day
[ ] FedEx Express Saver Third business day

4b Packages over 150 lbs.

[ ] FedEx 1Day Freight Next business day
[ ] FedEx 2Day Freight Second business day
[ ] FedEx 3Day Freight Third business day

5
[ ] FedEx Envelope/Letter
[ ] FedEx Pak
[x] Other Pkg

6
[ ] SATURDAY Delivery
[ ] SUNDAY Delivery
[ ] HOLD Weekday at FedEx Location
[ ] HOLD Saturday at FedEx Location

Does this shipment contain dangerous goods?

[x] No [ ] Yes As per attached Shipper's Declaration [ ] Yes Shipper's Declaration not required [ ] Dry Ice

Dangerous Goods cannot be shipped in FedEx packaging

[ ] Cargo Aircraft Only

7 Bill to:

[x] Sender [ ] Recipient [ ] Third Party [ ] Credit Card [ ] Cash/Check

Total Packages	Total Weight	Total Declared Value
1	5	$ .00

Our liability is limited to $100 unless you declare a higher value. See back for details.

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0126 793

CLIENT CHAIN OF CUSTODY **SAMPLER'S SIGNATURE** Colin Wellenkamp **Project/Quote 04961/9900001069**

From (1): Solutia,Inc.
575 Maryville Center Drive
St. Louis, MO 63141

Contact: Mr. Alan Cork
Phone: 314-842-4550
Fax: 314-674-8957
P.O.# (1):

Project (1): Sauget Area 1 Support Sampling

(SOL05 /FMS)

Data to be reported to the state of MO.

Analysis Wanted (2): DIOXIN (8290)

Total Number of Containers: 3

Turn Around Time (In Calendar Days):

Sample ID (3)	Date / Time	Preservation (4)	Matrix	Sample Amt.	DIOXIN (8290)					Remarks
Leach-G-1	4-26-00 1300	cool	water	2, 1 liter	✓					
TEMP BLANK	3-14-00		water	1						

Relinquished By/Sign.	Date/Time	Received By/Sign.	Relinquished By/Sign.	Date/Time	Received By/Sign.
Colin Wellenkamp	4-26-00 1300	Fed ex 8170 9423 1793			

Received for Laboratory By/Signature	Date/Time	
		Send Samples to: Triangle Laboratories, Inc. Attn: Sample Custodian 801 Capitola Drive Durham, NC 27713 USA Phone: (919) 544-5729 • Fax: (919) 544-5491

299A-11

Directions:
(1) Provide and/or correct client and project information.
(2) Verify analysis, check approriate boxes for each sample.
(3) Enter the sample ID to be used when reporting the samples.
(4) Please indicate the preservation used for each sample.

FedEx USA Airbill FedEx Tracking Number 8170 9423 1793 Form ID No. 0215

299A-12

1 From Please print and press hard

Date 4-26-00 Sender's FedEx Account Number 1187-9587-3

Sender's Name Colin Wellenkamp Phone (314) 842-4550

Company O'BRIEN & GERE

Address 5000 CEDAR PLAZA PKWY STE 211

City SAINT LOUIS State MO ZIP 63128

Your Internal Billing Reference 23548.080.001

To

Recipient's Name FRANK STEVENS Phone (919) 544-5729

Company TRIANGLE LABORTIES

Address 801 CAPITOLA DR

We cannot deliver to P.O. boxes or P.O. ZIP codes

City DURHAM State NC ZIP 27713

See back for application instructions

Questions? Call 1·800·Go·FedEx (800 463 3339)

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4a Packages up to 150 lbs.

- [x] FedEx Priority Overnight
- [ ] FedEx Standard Overnight
- [ ] FedEx First Overnight
- [ ] FedEx 2Day
- [ ] FedEx Express Saver

4b Packages over 150 lbs.

- [ ] FedEx 1Day Freight
- [ ] FedEx 2Day Freight
- [ ] FedEx 3Day Freight

5

- [ ] FedEx Letter
- [ ] FedEx Pak
- [x] Other Pkg

6

- [ ] Saturday Delivery
- [ ] Sunday Delivery
- [ ] HOLD Weekday at FedEx Location
- [ ] HOLD Saturday at FedEx Location

Does this shipment contain dangerous goods?

- [x] No
- [ ] Yes
- [ ] Yes
- [ ] Dry Ice
- [ ] Cargo Aircraft Only

7 Bill to:

- [x] Sender
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

Total Packages 1 Total Weight 21 Total Declared Value $ 00

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8

359

0119392504

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Figure 1. *Example chain-of-custody*

Project Name: Support Sampling . Sauget Area 1 Site, Solutia Inc.
Job No. 23548
Sheet 1 of 1

ffice: St. Louis - Div CAS
ss: 12250 Weber Hill RD
Phone: 314-842-4550

CHAIN OF CUSTODY

Cooler Temperature 4°C

CLIENT: Solutia LOCATION: Sauget, IL	COLLECTED BY: Tim Tedesco + Collin Wellercamp (Signature)

SAMPLE DESCRIPTION/LOCATION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED[3]	Sample Preservation
LEACH 2 - Site I	7/19/00	1100	Groundwater	Composite	25	N/A	ICE
LEACH 2 - Site G	7/19/00	1500	Groundwater	Composite	25	N/A	ICE
Site I shipment consists of 5 coolers							
Site G shipment consists of 5 coolers							

[1] Matrix = Ground water, surface water, sediment, biota [3] VOC - USEPA 8260, 8270, 6010 [2] Type = grab composite

Relinquished by	Date	Time	Received by	Date	Time
Relinquished by: Tim Tedesco of: O'Brien + Gere	7/20/00	0845	Received by: [signature] of: Heritage Environmental Env.	7/20/00	8:48
Relinquished by: [signature] of: Heritage Environmental Env.	7/20	1300	Received by: Jason Baby of: Advent Group	7/20	1:50
Relinquished by: of:	Date	Time	Received by: of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:	Date	Time	Courier Name and Airbill Number: *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: of:	Date	Time	Received by: of:	Date	Time

Advent Group
201 Summit View Dr
Brentwood, TN 37027
615-377-4775 - Pat Campbell

299A-13

Section 3.24 - 3.30

3.24 Overview of Ecological Assessment Field Sampling

The Ecological Field Assessment consisted of two separate sampling events: a Reconnaissance Survey that occurred on September 20 through 22, 1999 and the Main Sampling Event that occurred on October 4 to 9 and November 1 to 3, 1999. The Reconnaissance Survey provided information to identify reference areas and biota types for sampling. During the Main Sampling Event, which occurred at the same time as surface water and sediment sampling for chemical analysis, sediment samples were collected for toxicity bioassays. Biota samples collected during the main sampling event, including fish, invertebrates, benthic organisms, and vegetation, were analyzed for chemicals of concern (target analytes). Analyses of chemicals in fish fillets will also be used in the Human Health Risk Assessment to evaluate human exposure due to ingestion.

3.25 Ecological Reconnaissance Survey

3.25.1 Rationale/Design

The goals of the reconnaissance survey were to:

a) select ecological sampling stations in Dead Creek, the Borrow Pit, and reference areas
b) evaluate fish sampling methods and species for tissue analysis
c) evaluate invertebrate sampling methods and species for tissue analysis
d) evaluate crayfish sampling methods for tissue analysis
e) evaluate plant sampling methods and species for tissue analysis.

3.25.2 QA/QC Procedures

There were no QA/QC procedures required or employed during the ecological reconnaissance survey

3.25.3 Field Procedures

Prior to beginning the survey, a preparatory inspection meeting was held that was attended by a representative of each of the interested parties (Section 3.25.4).

The primary purpose for the survey was to select stations for the collection of surficial sediments, biological samples, and toxicity testing. The following criteria were applied in selecting sampling locations in Dead Creek sectors B, C, D, E, and F:

a) spatial coverage by locating stations near the upstream end of the sector, near the middle, and near the downstream end (three locations);
b) presence of depositional sediments as indicated by mud and/or fine sand;
c) presence of at least a few inches of water in order to insure that aquatic invertebrate life can exist.

The following criteria were applied in selecting sampling locations in the Borrow Pit:

a) spatial coverage by locating stations north of where Dead Creek enters the Borrow Pit, near the mouth of Dead Creek, and south of where Dead Creek enters the Borrow Pit.
b) presence of depositional sediments as indicated by mud and/or fine sand;
c) presence of at least a few inches of water to insure that aquatic invertebrate life can exist.

The following criteria were applied for the selection of reference areas:

a) physical similarity to Dead Creek or the Borrow Pit
b) location away from direct influence of industrial discharges, including major highways

The survey was carried out over a three-day period (September 20-22, 1999). Sample locations were identified by line of sight and were flagged with labeled tape. Habitat Assessment Field Data Sheets were filled out for each creek sector, the Borrow Pit, and the reference areas (Section 3.25.4). On September 21 and 22, Mike Ondrachek, an employee of Weston who served as representative for the US Environmental Protection Agency, joined the survey. The selection of sampling stations was discussed with Mr. Ondrachek throughout the effort.

As called for in the workplan, a total of 23 sampling stations were designated in Dead Creek, Site M, the Borrow Pit, and two reference areas for sediment triad analysis (chemistry, benthic invertebrate community, and sediment toxicity). Dead Creek was divided into five sectors, B, C, D, E, and F. Each Creek Sector contained three sampling stations, according to the above criteria, for a total of 15 sampling stations in Dead Creek. Site M, a flooded borrow connected to creek sector B, contained a single sampling station. The Borrow Pit contained three sampling stations.

Two reference areas were selected during the reconnaissance survey. Reference area 1 was a section of Old Prairie du Pont Creek near the town of East Carondelet, approximately 3 miles southwest of the end of Dead Creek in the Borrow Pit. This section of Old Prairie du Pont Creek is a broad shallow water body with a mud substrate similar to the Borrow Pit. It is distant from any influence from the site or other industrial areas, but is similar to the Borrow Pit in that it is near agricultural land. Two sampling locations were selected in reference area 1. These are depicted on Figure 3.25.3.1. It was not possible to obtain permission to sample the second reference area selected during the reconnaissance survey. Instead, two bodies of water in Monroe County, collectively referred to as reference area 2, were selected during the main sampling event. (The deviation log for this change is in Section 3.25.4). These water bodies were approximately 20 miles south of Dead Creek. These two water bodies contained one sampling station each. Reference area 2-1 was in Long Slash Creek north of the culvert where Merrimac Road crosses the creek. This section was similar to Dead Creek sectors B through E in that it was shallow and muddy. Reference area 2-2 was a flooded borrow pit north of Fountain Creek. These reference areas are shown on Figure 3.25.3.2.

The second part of the survey was to observe and select the biota present for tissue analysis and determine methods of biota sampling. For invertebrates for tissue analysis, snails were selected because they were abundant in most of the creek sections and would provide sufficient tissue for chemical analysis. Clams were observed in the Borrow Pit and were selected for analysis from that area. Both these organisms could be collected by hand from the sediment surface.

A baited minnow trap was deployed overnight in the Borrow Pit during the reconnaissance to evaluate the presence of crayfish for sampling. None were caught in the trap. It was decided to employ both minnow traps and beach seines to collect this species during the main sampling event.

Fish were observed in most creek sectors and the Borrow Pit. Because of the shallow water present, beach seining was selected as the primary fish collection method. Catfish traps, minnow traps, and gill nets were also identified as fish collection methods.

The vegetation observed growing on the sediment surface in most creek sections was creeping buttercup (*Ranunculus reptans*). Emergent species such as cattails were only observed in one creek section. Therefore, creeping buttercup was selected as the vegetation species for analysis. These plants could be collected by hand.

3.25.4 Documentation

The preparatory meeting inspection form for this task is in Section 3.25.4.1. The Habitat Assessment Field Data Sheets are in section 3.25.4.2. The deviation log for the change in reference area is in Section 3.25.4.3. Photographs are in Section 3.25.4.4. Section 3.25.4.5 contains the Daily Work Logs, Work Forecasts, and Safety Meeting Forms from the Reconnaissance Survey. Section 3.25.4.5 contains field notes from the Reconnaissance Survey.

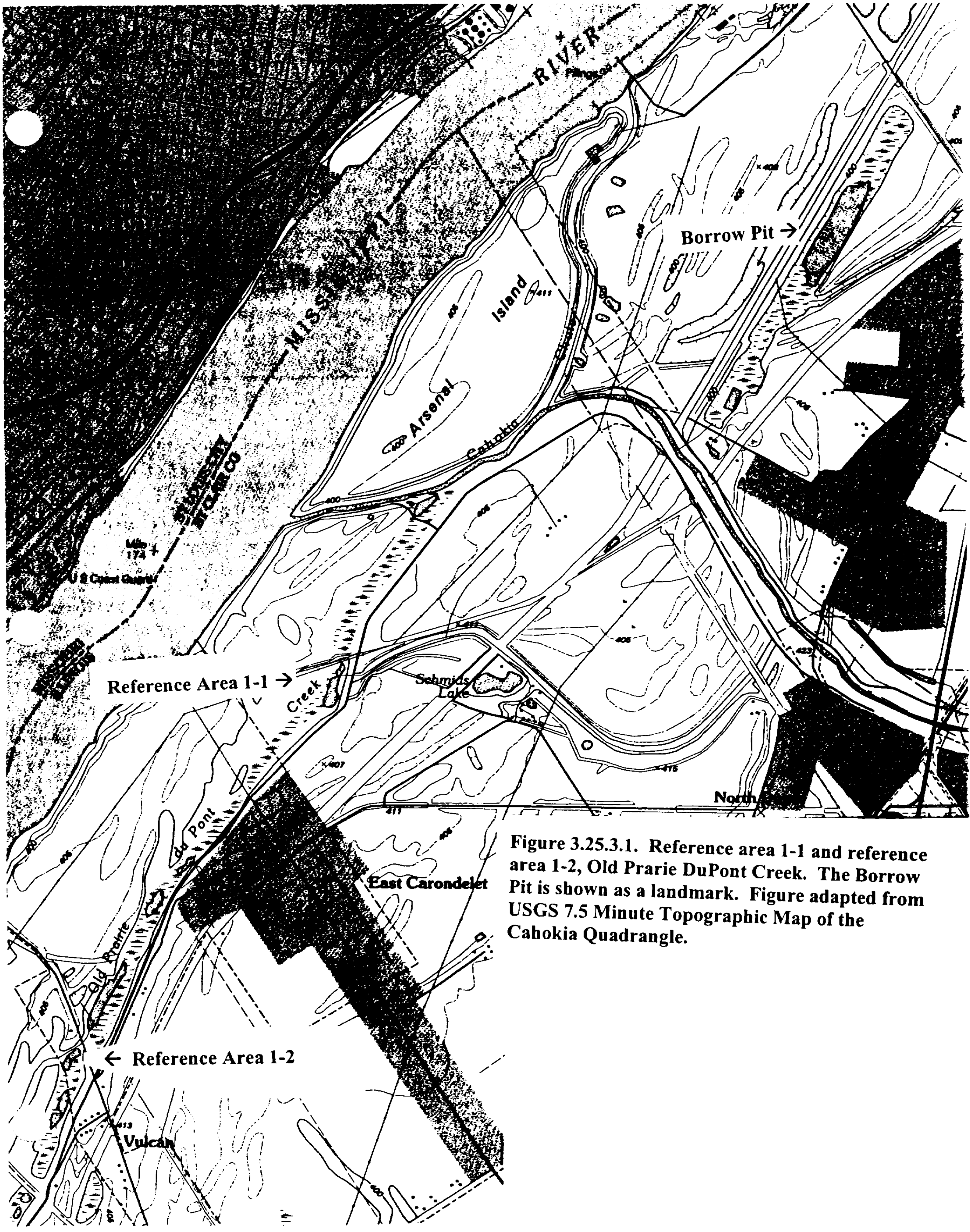
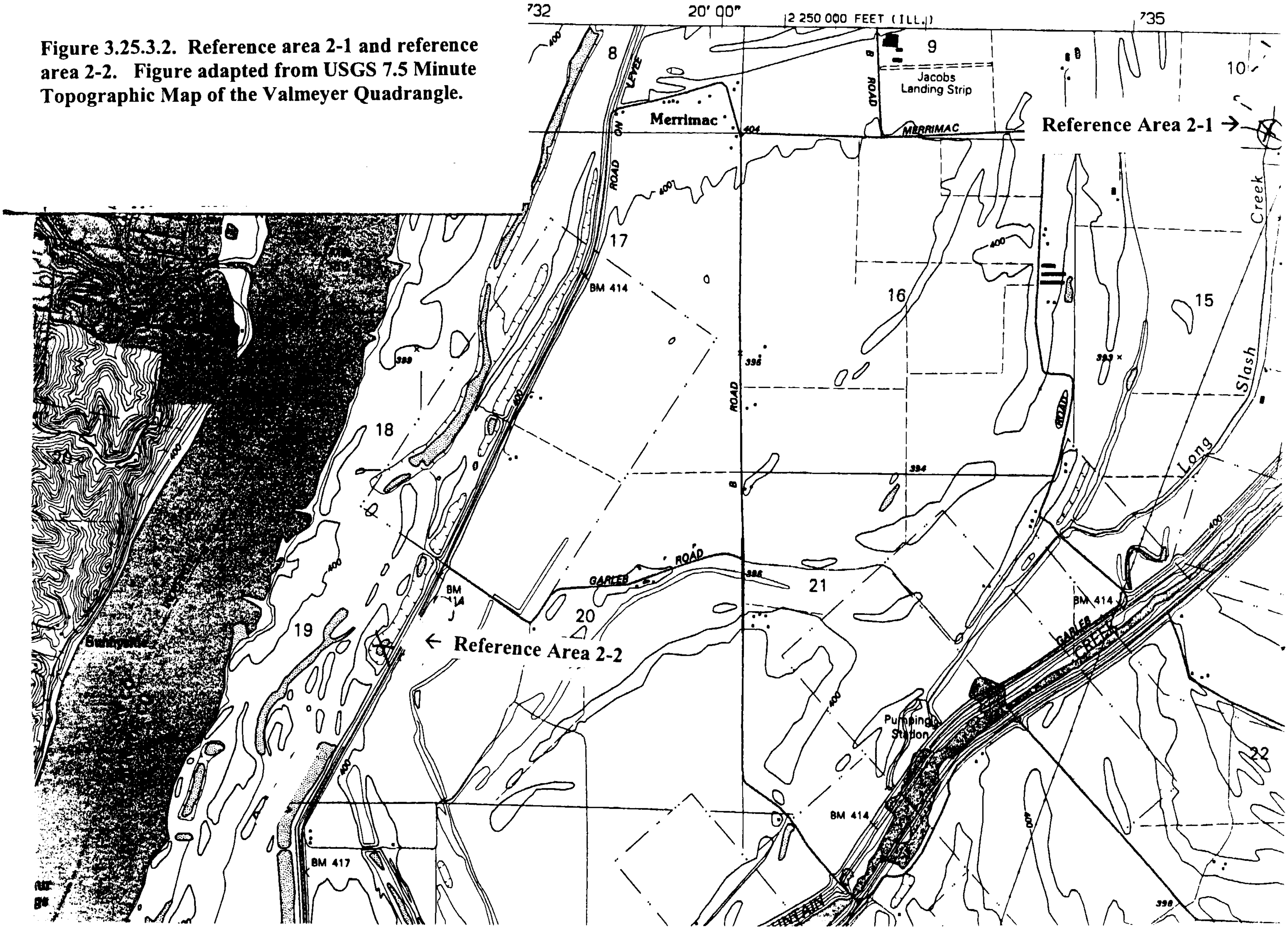


Figure 3.25.3.1. Reference area 1-1 and reference area 1-2, Old Prarie DuPont Creek. The Borrow Pit is shown as a landmark. Figure adapted from USGS 7.5 Minute Topographic Map of the Cahokia Quadrangle.

Figure 3.25.3.2. Reference area 2-1 and reference area 2-2. Figure adapted from USGS 7.5 Minute Topographic Map of the Valmeyer Quadrangle.



3.25.4.1 Preparatory Meeting Inspection Form

618 B

PREPARATORY INSPECTION MEETING

Conducted by/Company: Menzie - Cura **Date:** 9/20/99
Project Name: Solutia Sauget Area 1 **Task:** Recon Survey (Ecological)

1. **Scheduled Work:**
2. **Equipment, Procedures, Personnel:**
3. **Ref. To App. Sec. of FSP/HASP:**
4. **Issues that could arise and how to resolve:**
5. **Solutia comments:**
6. **EPA comments:**

1. Schedule Work
   A. Select stations in Dead Creek, Borrow Pit, Reference locations for triad sampling
   B. Select plant species for tissue analysis
   C. Collect and qualitatively examine sediments for invertebrates
   D. Evaluate trap method for collecting crayfish
   E. Determine if fish are present in creek segments
2. D-Net, GPS, Personnel from Menzie - Cura (Menzie/Fogarty) EPA/Weston observer
3. Ecological Risk Assessment QAPP/FSP Sect 4.2.1
4. None anticipated (Field Decision Log) 5. None 6.

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Katherine Fogarty	[signature]	Menzie-Cura Associates
Igor Linkov	[signature]	Menzie-Cura Associates
Kimberly Perry	[signature]	Solutia
Erik Kempel	[signature]	RFW
John Fiore	[signature]	Maverick
Charles Menzie	[signature]	Menzie - Cura

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature]
PRINTED NAME/ SIGNATURE OF PREPARER

9/20/99
DATE

Given to weston at 3:30 pm on 9/20/99

3.25.4.2 Habitat Assessment Field Data Sheets

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

STREAM NAME: Dead Creek		**LOCATION** Section B		
STATION #	**RIVERMILE:**	**STREAM CLASS**		
LAT:	**LONG:**	**RIVER BASIN** Mississippi		
STORET#		**AGENCY** Menzie-Cura & Associates, Inc.		
INVESTIGATORS C. Menzie, K. Fogarty				
FORM COMPLETED BY: K. Fogarty, C. Menzie		**DATE:** 10/4/99 **AM PM**	**REASON FOR SURVEY** Remedial Investigation	

Habitat Parameter	CATEGORY			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale.	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent: root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present	All mud or clay or sand bottom; little or no root mat; no submerged vegetation	Hard-pan clay or bedrock no root mat or vegetation
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
3. **Pool Variability**	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools	Majority of pools small-shallow or pools absent
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. **Channel Alteration**	Channelization of dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. **Sediment Deposition**	Little or no enlargement of islands or point bars and less than 5%<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment: 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. **Channel Sinuosity**	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note – channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. **Channel Flow Status**	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
8. Bank Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**	More than 90% of the streambank surfaces covered by native vegetation, including trees. Understory shrubs, or nonwoody macrophtes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70 – 90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble heights.
SCORE right (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
SCORE left (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
9. Bank Stability **(score each bank)**	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for, future problems. <5% of bank affected	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE right (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
SCORE left (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Widths of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zones 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities
SCORE right (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
SCORE left (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**

Total Score 116

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (BACK)

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

STREAM NAME: Dead Creek		**LOCATION** Section C	
STATION #	**RIVERMILE:**	**STREAM CLASS**	
LAT:	**LONG:**	**RIVER BASIN** Mississippi	
STORET#		**AGENCY** Menzie-Cura & Associates, Inc.	
INVESTIGATORS C. Menzie, K. Fogarty			
FORM COMPLETED BY: K. Fogarty, C. Menzie		**DATE:** 10/4/99 **AM PM**	**REASON FOR SURVEY** Remedial Investigation

Habitat Parameter	CATEGORY			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale.	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent: root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present	All mud or clay or sand bottom; little or no root mat; no submerged vegetation	Hard-pan clay or bedrock no root mat or vegetation
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools	Majority of pools small-shallow or pools absent
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Channel Alteration	Channelization of dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5%<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment: 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note – channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
8. Bank Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**	More than 90% of the streambank surfaces covered by native vegetation, including trees. Understory shrubs, or nonwoody macrophtes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70 – 90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble heights.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9. Bank Stability **(score each bank)**	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for, future problems. <5% of bank affected	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Widths of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zones 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 104

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (BACK)

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

STREAM NAME: Dead Creek		**LOCATION** Section D		
STATION #	**RIVERMILE:**	**STREAM CLASS**		
LAT:	**LONG:**	**RIVER BASIN** Mississippi		
STORET#		**AGENCY** Menzie-Cura & Associates, Inc.		
INVESTIGATORS C. Menzie, K. Fogarty				
FORM COMPLETED BY: K. Fogarty, C. Menzie		**DATE:** 10/4/99 **AM PM**	**REASON FOR SURVEY** Remedial Investigation	

Habitat Parameter	CATEGORY			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale.	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent: root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present	All mud or clay or sand bottom; little or no root mat; no submerged vegetation	Hard-pan clay or bedrock no root mat or vegetation
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools	Majority of pools small-shallow or pools absent
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Channel Alteration	Channelization of dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5%<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment: 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note – channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
8. Bank Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**	More than 90% of the streambank surfaces covered by native vegetation, including trees. Understory shrubs, or nonwoody macrophtes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70 – 90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble heights.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9. Bank Stability **(score each bank)**	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for, future problems. <5% of bank affected	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Widths of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zones 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 101

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (BACK)

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

STREAM NAME: Dead Creek		**LOCATION** Section E	
STATION #	**RIVERMILE:**	**STREAM CLASS**	
LAT:	**LONG:**	**RIVER BASIN** Mississippi	
STORET#		**AGENCY** Menzie-Cura & Associates, Inc.	
INVESTIGATORS C. Menzie, K. Fogarty			
FORM COMPLETED BY: K. Fogarty, C. Menzie		**DATE:** 10/4/99 **AM PM**	**REASON FOR SURVEY** Remedial Investigation

Habitat Parameter	CATEGORY			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale.	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent: root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present	All mud or clay or sand bottom; little or no root mat; no submerged vegetation	Hard-pan clay or bedrock no root mat or vegetation
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
3. **Pool Variability**	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools	Majority of pools small-shallow or pools absent
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. **Channel Alteration**	Channelization of dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. **Sediment Deposition**	Little or no enlargement of islands or point bars and less than 5%<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment: 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. **Channel Sinuosity**	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note – channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. **Channel Flow Status**	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
8. Bank Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**	More than 90% of the streambank surfaces covered by native vegetation, including trees. Understory shrubs, or nonwoody macrophtes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70 – 90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble heights.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9. Bank Stability **(score each bank)**	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for, future problems. <5% of bank affected	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Widths of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zones 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 98

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (BACK)

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

STREAM NAME: Dead Creek		**LOCATION** Section F	
STATION #	**RIVERMILE:**	**STREAM CLASS**	
LAT:	**LONG:**	**RIVER BASIN** Mississippi	
STORET#		**AGENCY** Menzie-Cura & Associates, Inc.	
INVESTIGATORS C. Menzie, K. Fogarty			
FORM COMPLETED BY: K. Fogarty, C. Menzie		**DATE:** 10/4/99 **AM PM**	**REASON FOR SURVEY** Remedial Investigation

Habitat Parameter	CATEGORY			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale.	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent: root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present	All mud or clay or sand bottom; little or no root mat; no submerged vegetation	Hard-pan clay or bedrock no root mat or vegetation
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
3. **Pool Variability**	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools	Majority of pools small-shallow or pools absent
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. **Channel Alteration**	Channelization of dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. **Sediment Deposition**	Little or no enlargement of islands or point bars and less than 5%<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment: 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. **Channel Sinuosity**	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note – channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. **Channel Flow Status**	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY: Optimal	Sub-optimal	Marginal	Poor
8. Bank Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**	More than 90% of the streambank surfaces covered by native vegetation, including trees. Understory shrubs, or nonwoody macrophtes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70 – 90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble heights.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9. Bank Stability **(score each bank)**	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for, future problems. <5% of bank affected	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Widths of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zones 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 181

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (BACK)

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

STREAM NAME: Dead Creek/Borrow Pit		**LOCATION** Borrow Pit	
STATION #	**RIVERMILE:**	**STREAM CLASS**	
LAT:	**LONG:**	**RIVER BASIN** Mississippi	
STORET#		**AGENCY Menzie-Cura & Associates, Inc.**	
INVESTIGATORS C. Menzie, K. Fogarty			
FORM COMPLETED BY: K. Fogarty, C. Menzie		**DATE:** 10/4/99 **AM PM**	**REASON FOR SURVEY** Remedial Investigation

Habitat Parameter	CATEGORY			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover Large open shallow pond with mud bottom	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale.	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent: root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present	All mud or clay or sand bottom; little or no root mat; no submerged vegetation	Hard-pan clay or bedrock no root mat or vegetation
SCORE	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY: Optimal	Sub-optimal	Marginal	Poor
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools	Majority of pools small-shallow or pools absent
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Channel Alteration Man-made basin	Channelization of dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5%<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment: 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sedime deposition
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Sinuosity Man-made basin	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note – channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
8. Bank Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**	More than 90% of the streambank surfaces covered by native vegetation, including trees. Understory shrubs, or nonwoody macrophtes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70 – 90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble heights.
SCORE right **(lds.)**	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left **(lds.)**	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9. Bank Stability **(score each bank)**	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for, future problems. <5% of bank affected	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE right **(lds.)**	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left **(lds.)**	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Widths of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zones 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities
SCORE right **(lds.)**	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left **(lds.)**	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 167

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (BACK)

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

STREAM NAME: Old Prairie duPont Creek (reference area 1)		**LOCATION**
STATION #	**RIVERMILE:**	**STREAM CLASS**
LAT:	**LONG:**	**RIVER BASIN** Mississippi
STORET#		**AGENCY** Menzie-cura & Associates, Inc.
INVESTIGATORS C. Menzie, K. Fogarty		
FORM COMPLETED BY: K. Fogarty, C. Menzie	**DATE:** 10/4/99 **AM PM**	**REASON FOR SURVEY** Remedial Investigation

Habitat Parameter	CATEGORY			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale.	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent: root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present	All mud or clay or sand bottom; little or no root mat; no submerged vegetation	Hard-pan clay or bedrock no root mat or vegetation
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools	Majority of pools small-shallow or pools absent
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Channel Alteration	Channelization of dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5%<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment: 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note – channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
8. Bank Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**	More than 90% of the streambank surfaces covered by native vegetation, including trees. Understory shrubs, or nonwoody macrophtes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70 – 90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble heights.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9. Bank Stability **(score each bank)**	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for, future problems. <5% of bank affected	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Widths of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zones 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 115

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (BACK)

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

STREAM NAME: Reference Stream - Long Slash Creek (reference area 2-1)		**LOCATION** Monroe County
STATION #	**RIVERMILE:**	**STREAM CLASS**
LAT:	**LONG:**	**RIVER BASIN** Mississippi
STORET#		**AGENCY Menzie-cura & Associates, Inc.**
INVESTIGATORS C. Menzie, K. Fogarty		
FORM COMPLETED BY: K. Fogarty, C. Menzie		**DATE:** 10/4/99 **AM PM** / **REASON FOR SURVEY** Remedial Investigation

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale.	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent: root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present	All mud or clay or sand bottom; little or no root mat; no submerged vegetation	Hard-pan clay or bedrock no root mat or vegetation
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools	Majority of pools small-shallow or pools absent
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Channel Alteration	Channelization of dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5%<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment: 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sedime deposition
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note – channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
8. Bank Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**	More than 90% of the streambank surfaces covered by native vegetation, including trees. Understory shrubs, or nonwoody macrophtes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70 – 90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble heights.
SCORE right (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
SCORE left (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
9. Bank Stability **(score each bank)**	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for, future problems. <5% of bank affected	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE right (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
SCORE left (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Widths of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zones 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities
SCORE right (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
SCORE left (lds.)	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**

Total Score 92

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (BACK)

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

STREAM NAME: Reference Pond (reference area 2-2)		**LOCATION** Monroe County	
STATION #	**RIVERMILE:**	**STREAM CLASS**	
LAT:	**LONG:**	**RIVER BASIN** Mississippi	
STORET#		**AGENCY** Menzie-Cura & Associates, Inc.	
INVESTIGATORS C. Menzie, K. Fogarty			
FORM COMPLETED BY: K. Fogarty, C. Menzie		**DATE:** 10/4/99 **AM PM**	**REASON FOR SURVEY** Remedial Investigation

Habitat Parameter	CATEGORY			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover Farm Pond	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale.	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent: root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present	All mud or clay or sand bottom; little or no root mat; no submerged vegetation	Hard-pan clay or bedrock no root mat or vegetation
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools	Majority of pools small-shallow or pools absent
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Channel Alteration Man-made basin	Channelization of dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5%<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment: 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Sinuosity Man-made basin	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note – channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (FRONT)

Habitat Parameter	CATEGORY			
	Optimal	Sub-optimal	Marginal	Poor
8. Bank Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.** Rt=west side Left=east side	More than 90% of the streambank surfaces covered by native vegetation, including trees. Understory shrubs, or nonwoody macrophtes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70 – 90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble heights.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9. Bank Stability **(score each bank)**	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for, future problems. <5% of bank affected	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Widths of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zones 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities
SCORE right (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE left (lds.)	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 115

HABITAT ASSESSMENT FIELD DATA SHEET – LOW GRADIENT STREAMS (BACK)

3.25.4.3 Deviation Log

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION / COMPANY: C. Menzie / Menzie - Cura DATE 10/8/99

HEALTH & SAFETY APPROVAL REQUIRED: YES: ________ NO: ✓

PROJECT NAME Solutia Sauget Area I PROJECT LOCATION Dead Creek / Ref Area

WEATHER cloudy PRECIPITATION some TEMPERATURE 70

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 7

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT; TIME; MANPOWER; ETC.):
7. REMARKS:

1. sampling sediment, water, biota in reference areas

2. location and "number" of reference areas

3. we did not receive access to one of the pre-selected reference areas; we then looked for a substitute; we had also found that ~~the~~ the Old Prarie Du Pont Creek ref area lacked some characteristics we wanted for matching with Dead Creek; as a result we divided the second "reference area" into two distinct locations: a creek location more similar to Dead Creek (snails + plants present) and a pond location more similar to the Borrow Pit Lake (clams + large fish)

4. Collect one set of samples at each of the two locations - designate them as Ref Z-1 + Ref Z-2

Charles Menzie / [signature]

PRINTED NAME / SIGNATURE OF PREPARER

Kimberly Perry / [signature] 10/18/99

PRINTED NAME / SIGNATURE OF SOLUTIA REP / DATE

Charles Menzie 10/8/99

DATE

PRINTED NAME / SIGNATURE OF USEPA REP / DATE

IF ADDITIONAL SPACE IS REQUIRED,

Given to Weston 10/18/99 KAP

C:\Sauget\OBG Forms\DEVLOG.WPD

3.25.4.4 Photographs

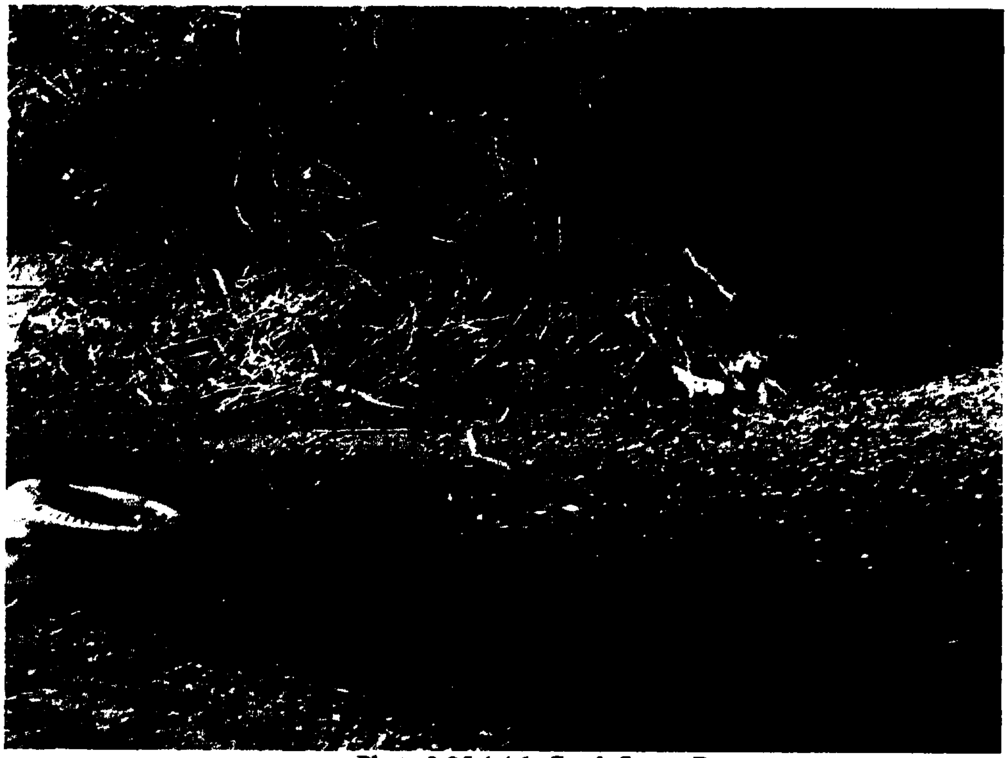


Photo 3.25.4.4.1 Creek Sector B

Photo 3.25.4.4.2 Creek Sector C showing vegetation.

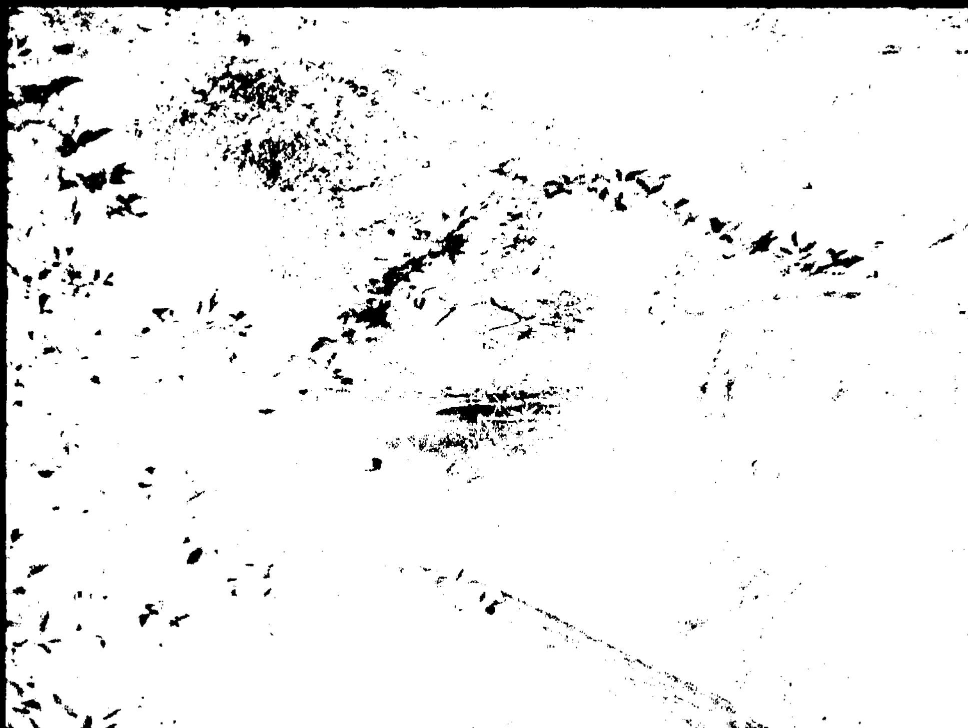


Photo 3.25.4.4.3 Creek Sector F showing dense vegetation.

3.25.4.5 Daily Work Logs, Work Forecasts, Safety Meeting Forms, Field Notes

DAILY WORK LOG

DATE 9/20/99

PROJECT NAME Solutia Sauget Area 1 PROJECT LOCATION Dead Creek

WEATHER overcast PRECIPITATION none TEMPERATURE 70°

NUMBER OF HOURS WORKED ~4 NUMBER OF EMPLOYEES 2

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. a) observed access points for Borrow Pit & creek segments
   b) selected sample locations in CS E

Given to weston 9/21/99 8:45am

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature] / 9/21/99
PRINTED NAME / SIGNATURE OF PREPARER / DATE

DAILY WORK LOG

DATE 9/21/99

PROJECT NAME Solutia Sauget I PROJECT LOCATION Dead Creek

WEATHER overcast PRECIPITATION ______ TEMPERATURE ~70-80

NUMBER OF HOURS WORKED 10 NUMBER OF EMPLOYEES 2

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. Completed recon survey for B, C, D, E, F, site M
and set crayfish trap in Borrow Pit

2. None

3. None

4. None

5. —

6. D-Net, QST

7. None

8. Water flow to CS-F is due mainly
to discharge from Phillips Pipeline

Given to Weston 9/22/99 7:55am [illegible]

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature]
PRINTED NAME / SIGNATURE OF PREPARER / DATE

DATE 9/22/99

PROJECT NAME Solutia Sauget I PROJECT LOCATION Reference Locations

WEATHER Sunny PRECIPITATION None TEMPERATURE 50-75

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 2

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. Selected two reference locations - Old Prarie Dupont Creek in vicinity of East Carondelet, west of and parallel to the Levee (RS-1); and, a wetland/pond environment west of Levee ~~at~~ on Oakville Quadrangle between Kire Crossing and Fountain Gap (RS-2)

permission/access must be sought from Prairie Du Pont ~~Creek~~ Levee Sanitary District for RS-1. We were unable to determine ownership for RS-2. However it is parallel to Taake Rd. The ~~two~~ locations on Taake Rd that might have info are Farris @ 9300 Taake Rd and Schaefer Stock Farm at 9442 Taake Rd.

2. None
3. None
4. None (except eliminate Harding Ditch as ref area)
5. None
6. GPS, camera
7. None
8. None
9. None

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

C. Menzie / [signature] / 9/22/99
PRINTED NAME / SIGNATURE OF PREPARER / DATE

I:\STLOUIS\DIVISION\ADMIN\1990\WORKLOG.WPD

WORK FORECAST

Work Forecast for the day/week: 9/20/99 **Date:** 9/16/99

Project Name: Solutia Sauget Area I **Project Location:** Dead Creek Borrow Pit, Reference Locations

Company Name: Menzie + Cura Associates (MCA)

1. **List Work Items and Locations Scheduled for Next Day/Week:**

(1) Recon survey of Dead creek to identify Station locations

(2) Recon Survey of Borrow Pit

(3) Select Reference Locations

(4) Qualitative examination of plants, invertebrates, crayfish presence

Given to Weston/EPA @ 325pm on 9/16/99

9/16/99

Name/Signature/Date of Preparer

Charles Menzie

If ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

WORK FORECAST

Work Forecast for the day/week: 9/20/99 **Date:** 9/16/99

Project Name: Solution Scarpt Area I **Project Location:** Deal Creek

Company Name: MCA (Menzie Cura)

1. **List Work Items and Locations Scheduled for Next Day/Week:**

(1) Orientation ~ 1300 h

(2) Begin recon of Deal Creek

Chas Menzie 9/

Name/Signature/Date of Preparer

If ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

WORK FORECAST

Work Forecast for the day/week: day - 9/21/99 **Date:** 9/21/99

Project Name: Solutia Sauget Area I **Project Location:** Dead Creek

Company Name: Menzie Cura + Associates

1. **List Work Items and Locations Scheduled for Next Day/Week:**

Ecological Recon for Dead Creek: B, C, D

Given to weston 9/21/99 8:45am

Chas Menzie 9/21/99

Name/Signature/Date of Preparer

Charles Menzie

If ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

WORK FORECAST

Work Forecast for the day/week: 9/22/99 **Date:** 9/22/99

Project Name: Solutia Sauget I **Project Location:** Reference Location

Company Name: Menzie - Cura

1. **List Work Items and Locations Scheduled for Next Day/Week:**

a) select reference locations (two)

b) Check crayfish trap

Given to Weston 9/22/99 7:55am KdP

Name/Signature/Date of Preparer

If ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

673 D

SAFETY MEETING FORM

CONDUCTED BY / COMPANY: Charlie Menzie / Menzie - Cura

DATE 9/20/99

PROJECT NAME Sunset Area 1

PROJECT LOCATION Dead Creek, Borrow Pit

WEATHER Overcast

PRECIPITATION None

TEMPERATURE ~70°F

NUMBER OF HOURS WORKED

NUMBER OF EMPLOYEES

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

1) conduct recon survey for eco - qualitative exam

2) Eco Risk Assessment QAPP/~~H~~FSP sect 4.2.1

3) avoid direct skin/eye contact with creek sediment & water -

4) where rubber waders while in creek, gloves when touching sediment/water, eye protection

5) None

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Katherine Fogarty	Katherine A Fogarty	Menzie-Cura
Igor Linkov	[signature]	Menzie Cura
Kimberly Perry	[signature]	Solutia
Erik Kemper	Erik Kemper	RFW
Charles Menzie	[signature]	Menzie - Cura
John Fiore	[signature]	Maverick

Given to Weston at 3:55pm on 9/20/99

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature]

PRINTED NAME / SIGNATURE OF PREPARER

9/20/99

DATE

I:\STLOUIS\DIVISION\ADMIN\1999\SAFLOG.WPD

SAFETY MEETING FORM

CONDUCTED BY / COMPANY: Charles Menzie

DATE 9/21/99

PROJECT NAME Solutia Sauget Area 1 PROJECT LOCATION Dead Creek

WEATHER partly cloudy PRECIPITATION none TEMPERATURE

NUMBER OF HOURS WORKED NUMBER OF EMPLOYEES 2

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

Day 2 of Recon

1. continue ecological recon
2. MCA Ecological Risk Workplan Sect 4.2.1
3. Avoid direct contact with sediments & water - poison ivy
4. none

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Erik Kemper	[signature]	RFW
John Fibre	[signature]	Maverick
Michael Ondrachek	[signature]	RFW
Kimberly J. Perry	[signature]	Solutia
Katherine Fogarty	[signature]	Menzie-Cura
[signature]	[signature]	Menzie-Cura

Given to Weston 9/21/99 8:45 am

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature]

PRINTED NAME / SIGNATURE OF PREPARER

9/21/99

DATE

SAFETY MEETING FORM

CONDUCTED BY / COMPANY: C. Menzie / Menzie - Cura DATE 9/22/99

PROJECT NAME Sculthia Area I Sampet PROJECT LOCATION Reference Areas

WEATHER Sunny PRECIPITATION none TEMPERATURE ~50-70

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 2

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

1. Select reference locations
2. MCA QAPP 4.2.1 Ecological Recon
3. Avoid contact with sediment & water
4 None

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
C. Menzie	[signature]	Menzie Cura
Katherine Fogarty	Catherine Fogarty	Menzie-Cura
Kimberly P[illegible]	[signature]	Sol-Tia
Erik Kr[illegible]	[signature]	RFW
MICHAEL OSARACHEK	Michael R. [illegible]	RFW

Given to Weston 9/22/99 7:55 am KKF

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature]
PRINTED NAME / SIGNATURE OF PREPARER

9/22/99
DATE

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

HIP POCKET

All-Weather Notebook
No. 146

Sangit Area I
Ecological
9-10 1999

4" x 6" - 50 Horizontal line sheets

(1)

9/20/99
8:00 AM
C Menzie, K. Fogarty, E. Linkov

F section at 1st St. & Jackson road - nearly dry with a few arrow heads
swale through traffic island

South end of culvert section E

puddle ~ ± 3' across
[illegible] culvert

90° 11' 05.07557 W
38° 34' 22.245 N

tiny fish in pool next day to intersection

(2)

Photos 57-60 in S End
ME S of culvert

Photo 5 N End - reg. cam.
4 S End / housing

CS-E-3 farthest S
N of culvert

56 photo

± 20' N of culvert
pond weed on surface

wpt 2, 90° 10' 55.4727"
38° 34' 20.91548
Reg Photo 3

(3)

Soft muck bottom
[illegible] FI

came across brown [illegible]

culvert w/ pipe

54+0 — CSE-2

lots of duck weed - [illegible]
deep muck separated
by sand dike delta not
under water

coordinate WP 7
90° 10' 52,9966
38° 34' 25,0366

Left Site 4:30

(4)

9/21/99

C. Menzie, K. Fogarty
Mike Cndracke from Weston

Section C 8:00 AM
South end of C
Green backed herons

animal tracks dogs, etc

~~sb~~ submerged veg.
± 1 foot

leaves
yellow butter cup
flower

minnows

≠ Not checked
Dry with water cover the
channel
duck weed on water
little fish in water

plant sample

caught 3 fish successfully
Remainder [illegible] a sample

CS-C-3
Wy Pt 8

90° 10' 39.28
38° 34' 53.45

photo 50-53

Walker [illegible], [illegible]

± 100' up
large 8" D burrow
photo 50.

larger fish
many burrows on W bank

50 1' corrugated metal
pipe off res. dunes

150' S of N end -
larger water area
sunfish-like species
bream?
catfish

heron maybe other species

#49 - N end of C
typha at N end

#18,17 Stub Nend of C
looking S

tadpole - ~~bat~~ bullfrog?

CS- ~~#~~ C-2

coordinates

90° 10' 29.508 wpt 9
38° 35' 00.365

CS-C-1
many tracks, green heron
small open water avg
snails
(white ~~e~~ egret at C-2)

many small snails to sample?
wpt 10 90° 10' 28.067
38° 36 01.859

[illegible]
[illegible] past [illegible]
[illegible]

[illegible] 4 [illegible]

CS-D-1 [illegible]
W side [illegible]

lots of tiny snails
lots of small + big fish

same [illegible] mat
w/ [illegible] yellow flowers

wpt 11 90° 16' 38.373
30° 34' 51.587

9:05 [illegible] wpt 2

Photo 1-15 - Still - Section
- Downstream [illegible] D-1

- lost Mike, Erik

CS-D-3 south of Kinder St Photo 15
vegetation w/ yellow flowers S of Kinder
frogs, lots of fish
drainage from house on west

CS-D-2 N of Kinder
small amt of plant
Typha
snails
fewer ~~no~~ fish
photo 14 looking at D-1
13 " " D-2
Coords
cond walk up from Cahokia St
wpt 12 90° 10' 40.132
38° 34' 49.249

Wpt 13 90° 10' 41.417
38° 34' 47.442

[illegible] snails

CS - B 8/21/89
10:40

digital photo of
drainage ditch that
receives ~~ed~~ discharge from
parking lot ~~and~~
from building at
Metro Storage Property

digital photo of
wet spot
wpt 14 (13) : 90° 10' 18.394
38° 35' 20.471

DP: 46 - CS-B~~O~~ QUEENY - LOOKING SOUTH

SNAILS PRESENT - SILTY CLAY SEDIMENT

15' NNE OF WPT 13 - DP 45
BOG/MARSH AREA - CSB - CLAY MOUND DEPOSIT. SMALL POCKETS OF H_2O.

CS-B-1 : DP 44 - NORTHERNMOST PORTION OF CONTINUOUS H_2O. SNAILS PRESENT. SIGNIFICANT AMOUNT OF A GRASSLIKE SUBMERGED PLANT & ALGAE. DEBRIS PRESENT - TIRES.
WPT 14: 90° 10' 19.850
38° 35' 19.215
HEADING SOUTH (APPROX 200 YDS) BIRDS & SMALL ANIMAL TRACKS PRESENT, FISH NOT VISIBLE - NO EVIDENCE SEEN.
DP 43 : CS-B - LOOKING SOUTH -
WPT 15 : 90° 10' 21.125
38° 35' 14.448

100' S. of DP 43/WPT 15: ANOTHER DRAINAGE DITCH FOUND. ALSO @ 200' S.

DP 42 - SITE M - LARGE POND. ABUNDANT H_2O FOWL.

~~NOTE~~ DP41 - SITE M - HERONS PRESENT
90° 10' 21.836
38° 35' 09.746

SUBSTANTIAL VEGETATION AROUND PERIMETER. VISUALLY APPEARS DEEP

SITE M & CS-B CONNECTED @ WPT17

WPT17: 90° 10' 22.977
38° 35' 09.399

DP 40 - CONNECTION BETWEEN SITE M & CS-B

~~*NOTE: DP 40~~

WPT-18: CS-B-3
90° 10' 23.198
38° 35' 08.505

NOTE: AREA HAS RUNNER PLANTS SIMILAR TO CS-D.

DP-39 - CS-B - NORTH OF SITE M
LOOKING SOUTH. H.O DEPTH: APPROX
1.5 - 2.0', WIDTH: 25 - 35', SUBMERGED
VEGETATION (POND WEED), FISH, SNAILS

DP-38 - CS-B-2
WPT-19: 90° 10' 21.121
38° 35' 13.033
ABUNDANT W/BIRD FOOT PRINTS.

DP-38 - CS-B-2 : LOOKING N.
NOTE: FOUND WALNUT APPROX
50' S. OF CS-B-2. WALNUT
IS APPROX 5" IN DIAMETER, SHELL
IS APPROX 75% EMPTY. AS IF
CONTENTS HAVE BEEN ROTTING

Photo 37/38

Nearby E Tributary S

Photo S[illegible] E/S [illegible]

Photo 3[illegible] [illegible] tracks
in water [illegible]

≈200' from N end
shallow area with
water covered w/
duckweed

WPT 20 90° 10' 44.344"
38° 34' 37.040"

no frogs & fish obs -
mucky soil
- veg w/ yellow flower present

Photo 3[illegible] CS-E-1

[illegible] Insert Sediment
Residual [illegible]
Strain [illegible] to
white St

Jaycees ~~[illegible]~~
[illegible] may [illegible]

CS-E-2 on Sand

Photo 34
small fish

90° 15' 43.391
38° 34' 34.667

little blue heron (?)
little [illegible] yellow plant

Section # F 2:00 PM
CM, KFF, Mike
Kimberly Carey

on N side spread
...
on S side small pocket
of sith

F at Levee -
water is flowing in
reverse direction
...
earthworm
- Kim leaves, John Flow from in
Previous = A

wpt				
B	90° 11'	40.585	CS-F-B
	38° 34'	19.438	CS-F-1

B[illegible] is by lagoon is by
pipeline
Photo 29 Co.
of Pipeline
lagoon
[illegible] of water fowl

Signs of beaver

more water flowing
than in Dead Creek

30 - spider

CS-F-6 CS-F-2
wpt 23
90° 11' 44.809
38° 54' 73.637
water bugs
little fish

followed soy bean
field down stream

great blue heron

± 300' from power
lines

CS-F-3 75' from
confluence w/
borrow pit

WPT 24

90° 12' 10.603
38° 34' 02.8476

can be accessed from
borrow pit

Foto 28

Marriot Courtyard Market St
314 241 9111 Lyn

Room 281

5:15 PM KAF: CAM

set minnow trap baited with bacon in Borrow Pit ± 1/3 down from road on "river" side

---

Michael R. Ondrachek
Roy F. Weston
(312)424-3307-PH, FAX: x3330
ondrachm@mail.rfweston.com

9/22/99

8:00 AM KAF, CAM, Mike Ondrachek

Checked minnow trap -
nothing
set in shallower water

9:45 Began recon of ~~reforms~~ areas

Along Prairie Du Pont Creek
Prairie Du Pont Levee Sanitary
District

Prairie Du Pont Creek
RS-1-1
~~cree~~

Photos 15-20
1 Still #4

Great egrets
Killdeer
on levee,
90° 13' 43.791
38° 32' 57.865

at bend in creek
soy bean field ~~to~~ east

creek to west

± 100 feet S of pump station & flood gate - w/ pumping station

~~#~~ = 100' S of where electric wires cross levee road and vent comes out of ground

green flagging on snag

RS-1-2 - head of area in PDP creek

by intersection of levee Rd and road running ⊥ to levee that goes to

photo 19.

WPt at gate to ⊥ Road to creek

WPT 26 on levee

90° 14' 03.025

38° 32' 39.518

Possibility of moving RS-1-2 farther, Sun PDP Creek

FISh Lake
photos 17, 18
width - 50 - 200'
plenty of water

bordered by shrubs
& agricultural land

RS-2-1
Ref for borrow pit

Phototos 14-20

90° 17' 22.161 on levee
38° 24' 53.831
great blue herons
great egrets

good potential ng
wooded -
open water

No trespassing signs

Farris
9300 Taake Rd

before Farris House -
After grey shed of stock farm
upon levee / down to pond

Schaefer Stock Farm 9442 Taake Rd
Past Columbia on Rte 3
Bluff to Bottom to Levee to Taake

Left

2pr. Waders
1 box gloves
1 box Ziploc bags
1 partial minnow trap
1 bucket
1 Tray

3.26 Sediment Toxicity Bioassays

3.26.1 Rationale/Design

Sediment samples from the 0 to 2 inch (upper 5 cm) depth interval were collected at each of the 23 sediment triad locations in creek sectors B through F, the Borrow Pit, Site M, and the reference locations to evaluate the toxicity associated with site-related chemicals to benthic organisms. These samples were collocated with the sediment samples collected for sediment chemistry (Section 3.20), surface water samples collected for chemical analysis (Section 3.21), and benthic macroinvertebrates for community evaluation (Section 3.27).

The sediment toxicity tests will be used to evaluate whether chemicals in sediments are toxic to benthic invertebrates. Acute toxicity tests were conducted at the 23 sampling locations with the amphipod *Hyalella azteca* and the insect larvae *Chironomus tentans* in accordance with USEPA analytical methods. The laboratory SOPs for these analyses were presented in Appendix A of the QAPP. For stations where the results of acute toxicity tests indicated that survival did not significantly differ from that in reference locations and control sediments, chronic tests were also conducted for these two species according to USEPA methods. The SOPs for these methods are also in the QAPP. The sequential testing (acute followed by chronic) eliminated the need to set up and run long-term tests for sediments in which acute toxicity had already been demonstrated.

3.26.2 QA/QC Procedures

Field duplicates were collected at a rate of one duplicate per 10 samples. Field duplicates were collected at Station 1 in the Borrow Pit and Creek Sector B-1 for sediment toxicity. The remaining types of QA/QC samples (equipment blanks, trip blanks, and MS/MSD samples) are not appropriate for sediment toxicity testing.

3.26.3 Field Procedures

Prior to beginning fieldwork, Preparatory Inspection Meetings were held that were attended by a representative of each of the interested parties (Section 3.26.4).

Sediment samples were collected at the same times and locations as the chemical analysis and benthic macroinvertebrate community analysis samples with a tall Eckman grab. A stainless steel spoon was used to scoop out the top two inches of sediment from the Eckman. This sediment was then placed in a large, stainless steel bowl. Approximately nine grabs provided enough sediment for the chemistry samples and sediment toxicity samples. (The VOC samples were collected directly from the first grab.) Once a bowl was filled, the sediment was homogenized by stirring and the sample containers were then filled. In between sampling stations, sampling equipment was decontaminated by washing in an Alconox solution followed by rinses in deionized water, methanol, and deionized water.

Approximately 4 liters of sediment were collected from each location for the sediment toxicity testing. Sediment toxicity samples were put on ice immediately after collection. Chain-of-custody forms were completed for each sample. Samples were sent to Aquatec Biological Sciences in South Burlington, Vermont, the same day they were sampled, via overnight delivery.

3.26.4 Documentation

Table 3.26.4 lists the sample stations where toxicity bioassay samples were collected. Figure 4 depicts these stations. The preparatory inspection meeting form for this task is in Section 3.26.4.1 and the chain-of-custody forms are in Section 3.26.4.2. Except for additional fish collection that occurred on November 1 through 3, 1999, the Main Sampling Event occurred on October 4 through 9, 1999. Sediment, invertebrate, and fish samples were collected concurrently. The Daily Work Logs, Work Forecasts, and Safety Meeting Forms for the Main Sampling Event are in Section 3.26.4.3 and the field notes are in Section 3.26.4.4. These forms and notes also apply to Sections 3.27 through 3.30.

Table 3.26.4
List of Sample Locations, Dates, and QA/QC Samples
Collected for Sediment Toxicity Bioassays
Sauget Area I

Sample ID	Station	Date Collected	QA/QC Samples
BTOX-B-1	Creek Sector B-1	10/5/99	Field Duplicate
BTOX-B-2	Creek Sector B-2	10/5/99	
BTOX-B-3	Creek Sector B-3	10/5/99	
BTOX-M	Site M	10/5/99	
BTOX-C-1	Creek Sector C-1	10/4/99	
BTOX-C-2	Creek Sector C-2	10/4/99	
BTOX-C-3	Creek Sector C-3	10/4/99	
BTOX-D-1	Creek Sector D-1	10/4/99	
BTOX-D-2	Creek Sector D-2	10/4/99	
BTOX-D-3	Creek Sector D-3	10/4/99	
BTOX-E-1	Creek Sector E-1	10/6/99	
BTOX-E-2	Creek Sector E-2	10/6/99	
BTOX-E-3	Creek Sector E-3	10/6/99	
BTOX-F-1	Creek Sector F-1	10/7/99	
BTOX-F-2	Creek Sector F-2	10/7/99	
BTOX-F-3	Creek Sector F-3	10/7/99	
BTOX-BP-1	Borrow Pit 1	10/6/99	Field Duplicate
BTOX-BP-2	Borrow Pit 2	10/7/99	
BTOX-BP-3	Borrow Pit 3	10/7/99	
BTOX-PDC-1	Reference Area 1-1 (Old Prarie DuPont Creek)	10/8/99	
BTOX-PDC-2	Reference Area 1-2 (Old Prarie DuPont Creek)	10/8/99	
BTOX-Ref2-1	Reference Area 2-1 (Long Slash Creek)	10/8/99	
BTOX-Ref2-2	Reference Area 2-2	10/8/99	

3.26.4.1 Preparatory Insepction Meeting Form

PREPARATORY INSPECTION MEETING

Conducted by/Company: Charles Menzie / Menzie Cura **Date:** 10/4/99
Project Name: Solutia Area I **Task:** Main Ecological Sampling Event

1. Scheduled Work:
2. Equipment, Procedures, Personnel:
3. Ref. To App. Sec. of FSP/HASP:
4. Issues that could arise and how to resolve:
5. Solutia comments:
6. EPA comments:

1. Main ecological sampling event / sediment (surficial)
2. sediment sampling, trawl, fish sampling, invert sampling, crayfish, plants. C. Menzie, K. Fogarty, S. Heppner, K. Cerreto, M. Avalkian, D. Levin, B. Amos, J. Perry
3. MCA QAPP 4.2.2 - 4.8.2
4. Key issues are related to biological sampling and what we will be able to catch - some decisions may need to be made in field - certain organisms may not be present
5.

6.

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
[illegible]	Chas Menzie	MCA
Katherine Fogarty	Katherine Fogarty	Menzie-Cura
Ken Lafferty	[illegible]	Mavickick
Ken Cerreto	[illegible]	Menzie Cura
Steven Bradman	[illegible]	RF. Weston
Erik Ke[illegible]	[illegible]	RF Weston
Alan Co[illegible]	[illegible]	OBG
JOSEPH W. PERRY	[illegible]	OBG
Kimberly Perry	[illegible]	Solutia

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature]
PRINTED NAME/ SIGNATURE OF PREPARER

10/4/99
DATE

Given to weston 10/4/99 07:30am Kaf

3.26.4.2 Chain-of-Custody

Aquatec Biological Sciences
Chain-of-Custody Record

75 Green Mountain Drive
South Burlington, VT 05403
TEL: (802) 860-1638
FAX: (802) 658-3189

COMPANY INFORMATION	COMPANY'S PROJECT INFORMATION	SHIPPING INFORMATION	VOLUME/CONTAINER TYPE/ PRESERVATIVE
Name: Menzie Cura & Associates	Project Name: Dead Creek Sediment Tox	Carrier:	4°C
Address: One Courthouse Lane, Suite 2 Chelmsford, MA 01824	Project Number: 99033	Airbill Number:	plastic
Telephone: (978) 453-4300	Sampler Name(s):	Date Shipped:	1 gal
Facsimile: (978) 453-7260			
Contact Name: Ken Cerreto, Ph.D.	Quote #: 3/99 Client Code: MENCUR	Hand Delivered: ___Yes ___No	

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMPOSITE	MATRIX	ANALYSIS / REMARKS	NUMBER OF CONTAINERS						
BTOX-C-1	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					
BTOX-C-1-2	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					
					Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity						
					Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity						
					Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity						

Relinquished by: *(signature)*	DATE	TIME	Received by: *(signature)*
Kenneth M Cerreto	10/4/99	19:00	
Relinquished by: *(signature)*	DATE	TIME	Received by: *(signature)*
Relinquished by: *(signature)*	DATE	TIME	Received by: *(signature)*

NOTES TO SAMPLER(S): We recommend nesting samples in ice to maintain 4°C during shipment. Please cover sample labels with clear tape (labels are not waterproof)

Notes to Lab: Cooler ambient temperature upon delivery:_____°C

3 Coolers

Aquatec Biological Sciences
Chain-of-Custody Record

75 Green Mountain Drive
South Burlington, VT 05403
TEL: (802) 860-1638
FAX: (802) 658-3189

COMPANY INFORMATION	COMPANY'S PROJECT INFORMATION	SHIPPING INFORMATION	VOLUME/CONTAINER TYPE/ PRESERVATIVE
Name: Menzie Cura & Associates	Project Name: Dead Creek Sediment Tox	Carrier:	4ºC
Address: One Courthouse Lane, Suite 2 Chelmsford, MA 01824	Project Number: 99033	Airbill Number:	plastic
Telephone: (978) 453-4300	Sampler Name(s):		
Facsimile: (978) 453-7260		Date Shipped:	
Contact Name: Ken Cerreto, Ph.D.			1 gal
	Quote #: 3/99 Client Code: MENCUR	Hand Delivered: ___Yes ___No	

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMPOSITE	MATRIX	ANALYSIS / REMARKS	NUMBER OF CONTAINERS					
BTOX-C-3-2	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					
BTOX-D-3	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					
BTOX-D-3-2	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					
BTOX-C-2-2	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					
BTOX-C-2	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					

Relinquished by: *(signature)*	DATE	TIME	Received by: *(signature)*
Kenneth V. Cerreto	10/4/99	19:00	
Relinquished by: *(signature)*	DATE	TIME	Received by: *(signature)*
Relinquished by: *(signature)*	DATE	TIME	Received by: *(signature)*

NOTES TO SAMPLER(S): We recommend nesting samples in ice to maintain 4°C during shipment. Please cover sample labels with clear tape (labels are not waterproof)

Notes to Lab: Cooler ambient temperature upon delivery:_____ºC

3 Coolers

Page ______ of ______

Aquatec Biological Sciences

Chain-of-Custody Record

75 Green Mountain Drive
South Burlington, VT 05403
TEL: (802) 860-1638
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Telephone: (978) 453-4300	Sampler Name(s):		
Facsimile: (978) 453-7260		Date Shipped:	
Contact Name: Ken Cerreto, Ph.D.			1 gal
	Quote #: 3/99 Client Code: MENCUR	Hand Delivered: ___Yes ___No	

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMPOSITE	MATRIX	ANALYSIS / REMARKS	NUMBER OF CONTAINERS					
BTOX-D-2	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					
BTOX-D-2-2	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					
BTOX-D-1	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					
BTOX-D-1-2	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					
BTOX-C-3	10/4			✓	Sediment	*Hyalella azteca* 10-d Survival & Growth *Hyalella azteca* 42-day Chronic Toxicity *Chironomus tentans* 10-d Survival & Growth *Chironomus tentans* Chronic Toxicity	1					

Relinquished by: *(signature)*	DATE	TIME	Received by: *(signature)*
Kenneth M Cerreto	10/4/99	19:00	
Relinquished by: *(signature)*	DATE	TIME	Received by: *(signature)*
Relinquished by: *(signature)*	DATE	TIME	Received by: *(signature)*

NOTES TO SAMPLER(S): We recommend nesting samples in ice to maintain 4°C during shipment. Please cover sample labels with clear tape (labels are not waterproof)

Notes to Lab: Cooler ambient temperature upon delivery:_____ºC

3 Coolers

C\99033\A\COC1.d

Serial Number 1_ _7910

SL ~~SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.~~ Aquatech Colchester, VT

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

[In two (2) coolers]

- ☐ 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
- ☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax: (904) 878-9504
- ☐ 414 SW 12th Avenue, Deerfield Beach, FL 33442 — Phone: (954) 421-7400 — Fax: (954) 421-2584
- ☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
- ☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049
- ☐ 100 Alpha Drive, Suite 110, Destrehan, LA 70047 — Phone: (504) 764-1100 — Fax: (504) 725-1163

PROJECT REFERENCE: Sauget Area I
PROJECT NO.: 648B
P.O. NUMBER:
PAGE 1 OF 1

PROJECT LOC. (State): IL
SAMPLER(s) NAME: C. Menzie, K. Fogarty
PHONE: 978-453-4300
FAX: 978-453-7260

CLIENT NAME: Menzie-Cura ~~Solutia~~
CLIENT PROJECT MANAGER: C. Menzie

CLIENT ADDRESS (CITY, STATE, ZIP): 1 Courthouse Lane Suite 2 Chelmsford MA

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc)

REQUIRED ANALYSES: Sed tox - Hazleton Extent is acute + chronic; none

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED	REMARKS
10/5/99	9:45		BTOX-B-1		X			2	
10/5/99	9:45		BTOX-B-1 (dupe)		X			2	
10/5/99	14:10		BTOX-B-2		X			2	
10/5/99	9:00		BTOX-B-3		X			2	
10/5/99	13:40		BTOX-M		X			2	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Katherine A Fogarty	10/5/99	1725						
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS:
			☐ YES ☐ NO			

ORIGINAL

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
648B	Sauget Area I - Dead Creek	Sauget/Cahokia Ill

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

DATE: 10/6/99

SAMPLERS: C Menzie, K Fogarty

Analyses Required

SAMPLE ID	Date	~~Comp.~~	Time ~~Grab~~	Station Locations	No. of Containers	Bioassay See note ①					NOTES
E-1	10/6/99		9:50	Dead Creek-Sed. E	2	X					
E-2	↓		9:05	↓	2	X					
E-3			1210		2	X					
BP-1			11:30	Borrow Pit	2	X					
BP1(Dupe)			16:30	↓	2	X					
BP-3	↓		16:30	↓	2	X					

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Kathleen A Fogarty	10/6/99	1900			
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Remarks: Note ① H. azteca/ C. tentans acute/ chronic sediment toxicity tests

Laboratory: Aquatech

Phone:

Contact Person: Phil. Downey

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:	
648B	Dead Creek - Sauget Area I	Sauget/Cahokia, Ill	MENZIE-CURA & ASSOCIATES, INC. 1 COURTHOUSE LANE, SUITE 2 CHELMSFORD, MA 01824 TEL: 978/453-4300 FAX: 978/453-7260

DATE: 10/7/99

SAMPLERS C. Menzie, K Fogarty

Analyses Required

SAMPLE ID	Date	Time ~~Comp.~~	~~Grab~~	Station Locations	No. of Containers	H. azteca's C. tentans acute; chronic					NOTES
BP-2	10/7/99	9:30		Borrow Pit	2	X					
F-1	↓	15:00		Dead Creek - Section F	2	X					
F-2	↓	16:10		↓	2	X					
F-3	↓	10:45		↓	2	X					

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Katherine A Fogarty	10/7/99	18:00			
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Remarks: Sent in 3 coolers via Fedex

Laboratory: Aquatech

Phone:

Contact Person: Phil Downey

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
648B	Dead Creek - Sauget Area I	Sauget-Cahokia, Ill.

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

DATE: 10/8/99

SAMPLERS C. Menzie, K. Fogarty

Analyses Required

SAMPLE ID	Date	Time Comp.	~~Grab~~	Station Locations	No. of Containers	[illegible]					NOTES
PDC-1	10/8/99	9:30		Prairie du Pont Creek	2	X					
PDC-2	↓	11:20		" " "	2	X					
Ref2-1	↓	16:30		Ref creek	2	X					

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Katherine A. Fogarty	~~10~~ 10/8/99	18:30			
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Remarks:
2 coolers via Fedex
Shipping bill No
811399409571

Laboratory: Aquatech

Phone:

Contact Person: Phil Downey

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
648B	Dead Creek - Sauget Area I	Sauget / Cahokia, Ill.

DATE: 10/9/99

SAMPLERS C. Menzie, K. Fogarty

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

Analyses Required

	SAMPLE ID	Date	Time ~~Comp.~~	Grab	Station Locations	No. of Containers	H. azteca + C. tentans acute + chronic					NOTES
BTOX	Refa-2	10/9/99	10:30	✓	Reference Borrow Pit	2	✓					

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Katherine Fogarty	10/9/99	12:30			

Remarks: Sent via US Air Counter to Counter

Laboratory: Aquatech

Phone:

Contact Person: Phil Downey

3.26.4.3 Daily Work Logs, Work Forecasts, Safety Meeting Forms

DAILY WORK LOG

DATE 10/4/99

PROJECT NAME Soulhia Area I PROJECT LOCATION Dead Creek

WEATHER cloudy - sunny PRECIPITATION none TEMPERATURE 50 - 70

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 7

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. a) Completed triad sampling at C-1, C-2, C-3
~~Ba~~ D-1, D-2, D-3

b) completed plant sampling, invertebrate (snail) sampling, in C + D

c) collected forage fish sample from D; none available in C but we collected cat fish there (to hold)

d) habitat evaluations for C + D

2. none

3. none

4. deviations - took whole plant sample of vine-like plant + did not seperate root & stem - discussed with Steve Rodman of Weston

5. none

6. sediment sampling & ecological sampling

7. none

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature]

PRINTED NAME / SIGNATURE OF PREPARER / DATE

Given to weston 10/4/99 20:45 [initials]

I:\STLOUIS\DIVISION\ADMIN\1999\WORKLOG.WPD

DAILY WORK LOG

DATE 10/5/99

PROJECT NAME Solutia Area I PROJECT LOCATION Dead Creek

WEATHER Sunny PRECIPITATION none TEMPERATURE 60-70

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 7

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. a) completed B and M
   b) set fish traps in borrow pit

2 none

3 none

4 none

5 none

6 sediment, ecological, fish collections

7 none

8 none

9 reinforced importance of PFDs

Given to Weston 10/6/99 0740

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature] / 10/5/99

PRINTED NAME / SIGNATURE OF PREPARER / DATE

DAILY WORK LOG

DATE 10/6/99

PROJECT NAME Solutia Area I PROJECT LOCATION Dead Creek

WEATHER Sunny PRECIPITATION none TEMPERATURE 60-75

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 7

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. a) Completed Segment E
b) completed Borrow Pit stations 1 and 3
c) completed all sediment QA/QC
d) collected fish
2. none
3. none
4. possibly substitute freshwater shrimp for crayfish - need to check on what we get in reference locations
5. none
6. eco, sediment
7. none
8. none

Given to meston 10/7/99 0825 ~~POF~~

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature] / 10/7/99
PRINTED NAME / SIGNATURE OF PREPARER / DATE

DAILY WORK LOG

DATE 10/8/99

PROJECT NAME Solutia Area I PROJECT LOCATION Dead Creek/Ref Area

WEATHER sunny PRECIPITATION 0 TEMPERATURE ~70

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 7

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. a) eco + sediment sampling at
F1, F2, F3, B2
and fish sampling at ref area 1
Old Prairie Dupont Creek

Given to weston 10/8/99 0745 AM

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature] / 10/8/99

PRINTED NAME / SIGNATURE OF PREPARER / DATE

DAILY WORK LOG

DATE 10/8/99

PROJECT NAME Solutia Sauget Area I PROJECT LOCATION Dead Creek and Ref Areas

WEATHER cloudy PRECIPITATION Some TEMPERATURE 70

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 7

1. ITEMS WORKED ON (ITEM NO. DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. a) completed sampling at stations F1 and F2
b) completed all sampling at Ref 2-1
c) completed fish sampling at Ref 2-2

4. In the morning we selected new reference areas because we did not have access to the area we selected during recon (see deviation log)

5. Weston oversight: Steve + Eric

6. ecological + sediment sampling

8. policeman helped us locate the new reference areas - extremely helpful - his name is Bruce Whipple

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature] / 10/9/99

PRINTED NAME / SIGNATURE OF PREPARER / DATE

Given to Weston [initials] 10/10/99

DAILY WORK LOG

DATE 10/9/99

PROJECT NAME Solutia Sauget Area I PROJECT LOCATION Ref Area 5

WEATHER cloudy - sunny PRECIPITATION light TEMPERATURE 70

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 6

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1.a) sediment sampling at Ref 2-2

b) clam & shrimp sampling at Ref 2-2

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Charles Menzie / [signature] / 10/9/99
PRINTED NAME / SIGNATURE OF PREPARER / DATE

TRANSMITTED TO WESTON
9/11/99 1215

C:\Sauget\OBO Forms\WORKLOG.WPD

DAILY WORK LOG

DATE 1/1/99

PROJECT NAME Dead Creek/Sauget Area I PROJECT LOCATION Sauget/Cahokia, Ill

WEATHER ______ PRECIPITATION showers TEMPERATURE ±30°F

NUMBER OF HOURS WORKED 30 NUMBER OF EMPLOYEES 3

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. Fishing in Borrow Pit and Old Prairie du Pont Creek - Collected 3 live large mouth bass in Borrow Pit; 7 in Prairie du Pont - We also picked up about 5 newly dead largemouth bass from Borrow Pit

2. none

3. none - However, we had a discussion with Eric Kamper of Weston regarding use of fish that were dead at time of collection. No definitive decision was made.

4. none

5. none

6. seines and dip nets

7. none

8. none

9. The water level is even lower in Borrow Pit than in October. Fish are dead or dying due to low water levels.

Hundreds of fish were caught in seines in both locations. None of fish caught in seines in Borrow Pit were largemouth or white bass.

Given to Weston 1/2/99 KAF 0722

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / Katherine Fogarty 1/1/99

PRINTED NAME / SIGNATURE OF PREPARER / DATE

DAILY WORK LOG

DATE 11/2/99

PROJECT NAME Dead Creek/Sauget Area I PROJECT LOCATION Sauget/Cahokia, Ill.

WEATHER clear PRECIPITATION none TEMPERATURE 30-40's °F

NUMBER OF HOURS WORKED ______ NUMBER OF EMPLOYEES 3

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. Collected fish from Reference Area 2-2 (Pond). 3 largemouth bass, 4+ crappie Returned to borrow pit, collected 2 largemouth bass
2. none
3. none
4. none
5. Eric Kemper of Weston observed fishing at Reference Area 2
6. seines, dip nets, jon boat
7. none
8. none
9. Seined 100's of lbs of fish from the Borrow Pit but only obtained 2 largemouth bass.

Given to me, ton 11/3/99 0735 KAF

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / Katherine Fogarty / 11/3/99
PRINTED NAME / SIGNATURE OF PREPARER / DATE

DAILY WORK LOG

DATE 11/3/99

PROJECT NAME Dead Creek - Sauget Area I PROJECT LOCATION Sauget/Cahokia, Ill.

WEATHER Clear PRECIPITATION none TEMPERATURE 50°F

NUMBER OF HOURS WORKED NUMBER OF EMPLOYEES

1. ITEMS WORKED ON (ITEM NO., DESCRIPTION, STA. TO STA., FOREMAN)
2. INSTRUCTIONS RECEIVED FROM SOLUTIA
3. INSTRUCTIONS RECEIVED FROM USEPA
4. DEVIATIONS
5. VISITORS (NAMES & TITLES)
6. EQUIPMENT
7. LUNCH MEETING COMMENTS:
8. UNUSUAL EVENTS (FIRE, FLOOD, STORM, LABOR DISPUTES, ETC.)
9. REMARKS:

1. Collected 1 largemouth bass from Borrow Pit.
2. none
3. none
4. none
5. none
6. Seine
7. none
8. none
9. none

Given to Weston 11/3/99 12:25

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / Katherine Fogarty 11/3/99
PRINTED NAME / SIGNATURE OF PREPARER / DATE

WORK FORECAST

Work Forecast for the day/week: Week of Oct 4th 99 **Date:** Oct 1, 1999

Project Name: Sauget Area I **Project Location:** Dead Creek, Borrow Pit Ref. Areas

Company Name: Menzie - Cura

1. List Work Items and Locations Scheduled for Next Day/Week:

During this week we will conduct the main sampling event for the ecological work. This work is described in:

Menzie - Cura QAPP Section 4.2.2

During this week we will:

a) collect sediment triad samples

b) collect snails/inverts for tissue analysis

c) collect fish for tissue analysis

d) collect plants for tissue analysis

e) collect crayfish for tissue analysis

Sample locations are described in the reconnaissance report submitted/written on September 24, 1999.

Submitted to Weston 10/1/99 9:03am

Charles Menzie [signature] / 10/1/99

Name/Signature/Date of Preparer

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

WORK FORECAST

Work Forecast for the day/week: 10/4/99 Date: 10/4/99

Project Name: Solutia Area I Project Location: Dead Creek

Company Name: Menzie - Cura

1. List Work Items and Locations Scheduled for Next Day/Week:

Our goals + objectives for today are:

1. get organized
2. sample all ecological entities in Creek segments C + D
3. sample sediments in creek segments C+D

If we are faster than anticipated we will begin sampling in E

Samples will include:

sediments (for Chemistry)
sediment (for toxicity)
benthic samples
fish tissues (if available)
crayfish (if available)
inverts (if available)
plants (if available)

Given to Weston 10/4/99 09:30 am

Charles Menzie / [signature] / 10/3/99
Name/Signature/Date of Preparer

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

WORK FORECAST

Work Forecast for the day/week: 10/5/99 **Date:** 10/5/99

Project Name: Solutia Area I **Project Location:** Dead Creek

Company Name: Menzie Cura

1. **List Work Items and Locations Scheduled for Next Day/Week:**

We will continue triad + ecological sampling. Goals for sampling include Segments B + E and Site M. We will also place trot lines in Borrow Pit Lake + possibly the reference areas. We may seine in Borrow Pit Lake. We will attempt to set crayfish traps.

Charles Menzie / 10/4/99
Name/Signature/Date of Preparer

If ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Given to Weston 10/4/99 20:45

WORK FORECAST

Work Forecast for the day/week: 10/6/99 Date: 10/6/99

Project Name: Sauget Area I Project Location: Dead Creek

Company Name: Menzie Cura

1. List Work Items and Locations Scheduled for Next Day/Week:

a) continue ecological + sediment work at Creek Segment E, Creek Segment F, and the Borrow Pit

~~b) set fis~~

b) possibly set nets overnight at the reference areas

Submitted to weston 10/6/99 KH

Charles Menzie / [signature] / 10/6/99
Name/Signature/Date of Preparer

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

WORK FORECAST

Work Forecast for the day/week: 10/7/99 Date: 10/7/99

Project Name: Solutia Area I Project Location: Dead Creek/Borrow Pit

Company Name: Menzie - Cura

1. List Work Items and Locations Scheduled for Next Day/Week:

Continue ecological/sediment sampling at:

a) Borrow Pit station 2 BP-2

b) Creek Segment F

c) Prairie Du Pont

We will complete fishing effort in BP.

Given to Weston 10/7/99 0825 KW

Charles Menzie / [signature] / 10/7/99
Name/Signature/Date of Preparer

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

WORK FORECAST

Work Forecast for the day/week: 10/8/99 Date: 10/8/99

Project Name: Solutia Area I Project Location: Dead Creek/Ref Areas

Company Name: Menzie Cura

1. List Work Items and Locations Scheduled for Next Day/Week:

complete ecological & sediment work at reference locations

Given to Weston 10/8/99 0745

Charles Menzie/[signature]/ 10/8/99

Name/Signature/Date of Preparer

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

WORK FORECAST

Work Forecast for the day/week: 10/9/99 Date: 10/8/99

Project Name: Solutia Sauget Area I Project Location: Ref Areas

Company Name: Menzie Cura

1. List Work Items and Locations Scheduled for Next Day/Week:

complete sampling at reference location 2 for ecological + sediments

Charles Menzie / [signature] / 10/8/99

Name/Signature/Date of Preparer

If ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

TRANSMITTED TO WESTON
9/4/99 1215

WORK FORECAST

Work Forecast for the day/week: of 11/1 Date: 11/1/99

Project Name: Dead Creek Sauget Area I Project Location: Sauget/Cahokia, Ill.

Company Name: Menzie-Cura & Associates

1. List Work Items and Locations Scheduled for Next Day/Week:

1. Collected game fish (largemouth bass or white bass) from Borrow Pit and Ref. Ponds to make complete ~~BO~~ sample nos.

2. Collect crappie from Ref ~~Area~~ Area 2 to make complete sample nos.

3. Pick up brown bullheads and crappie from Borrow Pit and Reference Ponds ~~to augment~~ if available to augment samples collected previously.

Katherine Fogarty / Katherine A. Fogarty 11/1/99
Name/Signature/Date of Preparer

If ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Given to Weston 11/1/99 0750 KAF

WORK FORECAST

Work Forecast for the day/week: 11/1/99 Date: 11/1/99

Project Name: Dead Creek Sauget Area I Project Location: Sauget/Cahokia, IL

Company Name: Menzie-Cura & Associates

1. List Work Items and Locations Scheduled for Next Day/Week:

1. ~~Set traps in bo~~ Organize equipment/tasks
2. Set traps in borrow pit and reference ponds
3. electroshock in borrow pit (and Ref ponds if time allows).

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / Katherine Fogarty / 11/1/99
Name/Signature/Date of Preparer

Given to Weston 11/1/99 0750 ~~—~~ KAF

WORK FORECAST

Work Forecast for the day/week: 11/2/99 Date: 11/2/99

Project Name: Dead Creek / Sauget Area I Project Location: Sauget/Cahokia, Ill

Company Name: Menzie-Cura & Associates

1. List Work Items and Locations Scheduled for Next Day/Week:

(1) Collect fish - at least 3 largemouth bass and 4 crappie from Reference Area 2

(2) Collect fish - at least 3 largemouth bass from the Borrow Pit.

Given to Weston 11/2/99 HP 0730.

Katherine Fogarty / Katherine Fogarty / 11/2/99
Name/Signature/Date of Preparer

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

WORK FORECAST

Work Forecast for the day/week: 11/3/99 Date: 11/3/99

Project Name: Dead Creek/Sauget Area I Project Location: Sauget/Cahokia, Ill

Company Name: Menzie-Cura Associates

1. List Work Items and Locations Scheduled for Next Day/Week:

Collect one largemouth bass from the Borrow Pit.

Given to weston 11/3/99 0735 KF

Katherine Fogarty / Katherine A Fogarty / 11/3/99
Name/Signature/Date of Preparer

IF ADDITONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

SAFETY MEETING FORM

CONDUCTED BY / COMPANY: Katherine Fogarty / Menzie-Cura DATE 10/4/99

PROJECT NAME Sauget Area 1 PROJECT LOCATION Dead Creek

WEATHER overcast PRECIPITATION none TEMPERATURE 45 °F at 7:30 AM

NUMBER OF HOURS WORKED 10 NUMBER OF EMPLOYEES 8

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

1. organize materials
sample sediment and biota in creek segments C and D; possibly begin creek segment E

2. Ecological Risk Assessment QAPP Sections 4.3, 4.4, 4.5, 4.6, 4.7, 4.8 and HASP

3. working in contaminated sediment - avoid contact with contaminated sediment by use of appropriate PPE - waders, gloves, safety glasses if splashing is an issue
Beware of slips, trips falls - especially in mud, wooded areas, etc.
beware of poison ivy

4. none
5. none

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Katherine Fogarty	[signature]	Menzie-Cura
Ken Lafferty	[signature]	MAVERICK
Ken Cerreto	[signature]	Menzie-Cura
Ben Amos	[signature]	Menzie-Cura
Doug Levin		" "
Susanne Hoeppner	[signature]	Menzie-Cura
Mike Arkin	[signature]	MCA
STEVEN BROOMAN	[signature]	RFWeston
E. L. Kenyon	[signature]	RFWeston
Allen J Cox	[signature]	OBG
JOSEPH W. PERRY	[signature]	OBG
Kimberly Perry	[signature]	Solutia
Charles Menzie	[signature]	MCA

Given to Weston 10/4/99 07:30 am

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / [signature]
PRINTED NAME / SIGNATURE OF PREPARER

10/4/99
DATE

SAFETY MEETING FORM

DATE 10/5/99

CONDUCTED BY / COMPANY: Menzie-Cura

PROJECT NAME Sauget Area I PROJECT LOCATION Dead Creek

WEATHER Clear, Sunny, ~~40°F~~ PRECIPITATION none TEMPERATURE 40°F at 7AM

NUMBER OF HOURS WORKED ______ NUMBER OF EMPLOYEES 7

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

(1) Sediment and Biota sampling in Sections B, E, and M. Begin fishing in Borrow Pit and Reference Areas

(2) Ecological work plan QAPP Section 4, Entire ecological HASP

(3) Avoid contact with contaminated sediment and surface water - Modified Level D waders, safety glasses, gloves
Boat safety - wear personal flotation in boat, avoid get tangled in lines
Trip, Slip, fall hazards
Poison Ivy
catfish spines - snapping
(4) Avoid catfish spines in collecting fish

(5) none

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Katherine Fogarty	Katherine Fogarty	Menzie-Cura
Ken Gricett	[signature]	Menzie-Cura
MARK AVAKIAN	[signature]	MCA
Ben Amos	[signature]	MCA
S. Bordman	[signature]	RF Weston
E. Kegan	[signature]	RF Weston
Susanne Hoeppner	[signature]	MCA
Doug Levin	[signature]	MCA
Charles Menzie	[signature]	MCA
Kimberly Perry	[signature]	Solutia
JOSEPH N. PERRY	[signature]	O'BRIEN & GERE

Given to Weston 10/5/99 KAF

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / [signature]
PRINTED NAME / SIGNATURE OF PREPARER

10/5/99
DATE

SAFETY MEETING FORM

DATE 10/6/99

CONDUCTED BY / COMPANY: Menzie-Cura

PROJECT NAME Sauget Area I PROJECT LOCATION

WEATHER Clear, sunny PRECIPITATION no TEMPERATURE ~40°F

NUMBER OF HOURS WORKED NUMBER OF EMPLOYEES 7

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

(1) Collect sediment and biota samples from the Borrow Pit and Creek Section E

(2) Ecological Workplan QAPP Section 4, Ecological Work Plan HASP

(3) Avoid sediment contamination, Modified Level D - waders, gloves, safety glasses; - Practice Boat safety - do not exceed boat capacity - Wear life jackets

Biological hazards - poison ivy, catfish spikes, etc

slip, trip, fall hazards

(4) Wear Life Jackets in Boat

(5) None

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Katherine Fogarty	Katherine A. Fogarty	Menzie-Cura
[illegible]	[illegible]	Menzie-Cura
MARK AVAKIAN	[illegible]	MCA
Doug [illegible]	[illegible]	MCA
Ben Ames	[illegible]	MCA
Susanne Hoeppner	Susanne Hoeppner	MCA
[illegible]	Chris Menzie	MCA
JOSEPH W. PERRY	Joseph W. Perry	OBG

GIVEN TO WESTON 10/6 0829 [illegible]

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / Katherine A. Fogarty

PRINTED NAME / SIGNATURE OF PREPARER

10/6/99

DATE

SAFETY MEETING FORM

CONDUCTED BY / COMPANY : Menzie-Cura DATE 10/7/99

PROJECT NAME Sauget Area I PROJECT LOCATION Dead Creek

WEATHER clear PRECIPITATION none TEMPERATURE 50°F at 7AM

NUMBER OF HOURS WORKED NUMBER OF EMPLOYEES 7

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

(1) Sediment and biota sampling in borrow pit and Section F

(2) Section 4 of ecological workplan QAPP; HASP of ecological workplan

(3) contact with contaminated sediment - avoid & use of waders, gloves, safety glasses

boat safety - use life jackets; avoid tangled lines; don't overload

biological hazards - poison ivy; snapping turtles, catfish spines

trip, slip, fall hazards

(4) Use life jackets in boat

(5) None

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Katherine Fogarty	Katherine Fogarty	Menzie-Cura
[illegible]	[illegible]	Solutia
Ken Lafferty	[illegible]	Maverick
Mark [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Menzie-Cura
Bob Amos	[illegible]	MCA
[illegible]	[illegible]	MCA
Susanne Hoeppner	Susanne Hoeppner	MCA
JOSEPH W. PERRY	Joseph W. Perry	OBG

Given to meeting 10/7/99 0825 KF

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / Katherine Fogarty
PRINTED NAME / SIGNATURE OF PREPARER

10/7/99
DATE

SAFETY MEETING FORM

DATE 10/8/99

CONDUCTED BY / COMPANY : Menzie - Cura

PROJECT NAME Sauget Area I - Dead Creek PROJECT LOCATION Sauget/Cahokia IL

WEATHER damp PRECIPITATION rain (light) TEMPERATURE ±60°F

NUMBER OF HOURS WORKED ______ NUMBER OF EMPLOYEES 7

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

(1) Sampling sediment; biota in reference areas

(2) Section 4 of ecological workplan & APP; HASP of ecological workplan

(3) use boat safety - where life jackets, don't overload boat, etc

slip, trip fall hazards

avoid biological hazards - poison ivy, snapping turtles, etc.

(4) none

(5) none

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
MARK AVAKIAN	[signature]	MCA
Dave Levin	[signature]	MCA
Beh Amos	[signature]	MCA
Ken Caresto	[signature]	MCA
Suzanne Hoeppner	Suzanne Hoeppner	MCA
Chris Menzie	[signature]	
Ron LAFFERTY	[signature]	MAVERICK
Alan Cook	[signature]	OBG
Kimberly Perry	[signature]	Solutia
S. Bodine	[signature]	R.F. Weston

Given to Weston 10/8/99 07:45 am KF

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / Katherine Fogarty

PRINTED NAME / SIGNATURE OF PREPARER

10/8/99

DATE

C:\Sauget\OBG Forms\SAFLOG.WPD

SAFETY MEETING FORM

DATE 10/9/99

CONDUCTED BY / COMPANY: Menzie-Cura

PROJECT NAME Sauget Area I PROJECT LOCATION Sauget/Cahokia

WEATHER overcast PRECIPITATION rain in early AM TEMPERATURE 65°F at 8AM

NUMBER OF HOURS WORKED ______ NUMBER OF EMPLOYEES 6

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

(1) sediment and biota sampling in reference area 2

(2) Section #2 4 of ecological workplan QAPP; HASP of ecological workplan

(3) avoid contact with sediment
practise boat safety - life jackets, don't overload the boat, avoid tangled lines
biological hazards - poison ivy, snapping turtles, etc
slip, trip, falls

(4) wear life jackets on boat

(5) none

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Ken Cerreto	[signature]	MCA
Mike Anderson	[signature]	MCA
Dan Leach	[signature]	MCA
Suzanne Hoeppner	[signature]	MCA
Charles Menzie	[signature]	MCA

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / [signature]
PRINTED NAME / SIGNATURE OF PREPARER

10/9/99
DATE

TRANSMITTED To Weston
9/11/99 1215

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SAFETY MEETING FORM

DATE 11/1/99

CONDUCTED BY / COMPANY: Katherine Fogarty

PROJECT NAME Dead Creek - Sauget Area 1 PROJECT LOCATION Sauget/Cahokia Ill

WEATHER ______ PRECIPITATION ______ TEMPERATURE 60-70°F

NUMBER OF HOURS WORKED ______ NUMBER OF EMPLOYEES 3

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

(1) Collect fish from Borrow Pit and Reference Area

(2) Section 4.7 of the QAPP for Ecological Risk Assessment, HASP for Ecological Risk Assessment

(3) Avoid contact with sediment
Trip, slip, Fall Hazards
Practice boating safety, wear life jackets in boat
Biological hazards, poison ivy, etc.

4. none

5. none

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Kimberly Perry	[signature]	Solutia
Doug Levin	[signature]	CMA
Phil Downey	[signature]	ABS
Erik Kongs	[signature]	RFW

Given to Weston - OTSB 11/1/99

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / Katherine Fogarty
PRINTED NAME / SIGNATURE OF PREPARER

11/1/99
DATE

SAFETY MEETING FORM

CONDUCTED BY / COMPANY: Katherine Fogarty / Menzie-Cura DATE 11/2/99

PROJECT NAME Dead Creek/Sauget Area I PROJECT LOCATION Sauget/Cahokia, Ill.

WEATHER ______ PRECIPITATION none TEMPERATURE 40-50°F.

NUMBER OF HOURS WORKED ______ NUMBER OF EMPLOYEES 3

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

1. Fish collection in ~~second~~ Reference Area 2 and Borrow Pit
2. Section 4.7 of eco risk assessment QAPP; HASP for eco risk assessment
3. Boating safety - wear life jackets in boat
Trip slip fall hazards.
Avoid contact with contaminated sediment
Avoid biological hazards; e.g., poison ivy
4. none
5. none

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Philip Dwyer	[signature]	ABS
Doug Levin	[signature]	CMM
Kimberly Perry	[signature]	Solutia
Kim Fogarty	[signature]	Menzie-Cura
E. Kagan	[signature]	RFW

Given to Weston 11/2/99 KAF 0730

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / Katherine A. Fogarty
PRINTED NAME / SIGNATURE OF PREPARER

11/2/99
DATE

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SAFETY MEETING FORM

CONDUCTED BY / COMPANY: Menzie-Cura DATE 11/3/99

PROJECT NAME Dead Creek / Sauget Area I PROJECT LOCATION Sauget/Cahokia, Ill

WEATHER ______ PRECIPITATION none TEMPERATURE 30-40°F

NUMBER OF HOURS WORKED ______ NUMBER OF EMPLOYEES 3

1. SCHEDULED WORK:
2. REFERENCES TO APPROPRIATE SECTION OF FSP & HASP:
3. HEALTH AND SAFETY ISSUES WITH SCHEDULED WORK:
4. SPECIFIC HEALTH AND SAFETY ISSUES REQUIRING ATTENTION:
5. COMMENTS:

1. Collection of fish from the Borrow Pit.

2. Ecological Risk Assessment QAPP Section 4.7; ecological risk assessment HASP

3 Practice Boat Safety - wear life jackets in the boat
Avoid slip trip fall hazards
Avoid contact with contaminated sediments
Avoid biological hazards; fish spines, poison ivy, etc.

ATTENDANCE:

EMPLOYEE NAME (print)	EMPLOYEE SIGNATURE	COMPANY
Doug Levin	[signature]	CMA
Erik [illegible]	[signature]	RFW
Phil Downey	[signature]	PCD
Richard Z Perry	[signature]	Solutia
Ken Lafferty	[signature]	Mavericic

Given to weston 11/3/99 0735 AM

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Katherine Fogarty / Katherine A Fogarty
PRINTED NAME / SIGNATURE OF PREPARER

11/3/99
DATE

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3.26.4.4 Field Notes

~~9/~~

10/15/99

set two gillnets
two feet line

~~#2~~

three crayfish
traps N. of
where F.
enters Barrow
Pit
@ 04:30 –
06:30
– overnight set

BP Site 2 - Wednesday

White Sucker	15"	2 lbs
brown bullhead	5"	
Shad	17"	2 lbs
Shad	16"	2 lbs
Shad	5"	
Shiner	5"	
Shiner	5"	
Shiner	5"	
Shiner	5"	
Sucker	12"	1 lb
Shad	16"	2 lbs
Shad	16"	2 lbs
Sucker	20"	3 lbs
Shiner	4"	
Shad	12"	1 lb Released
Crapple	4"	
Shiner	4"	
Shiner	4"	

Bass striped?	10"		K
Red Tail Sucker	15"	2lb.	R
Shad	15"	2lb	R
Shad	15"	2lb	R
Shad	15"	2lb	R
Crappie	6"		

6 set 3

shiner	Released	
crappie	R	
red tail	R	
bass striped	8"	K
sunfish	6"	K
largemouth	8"	K
largemouth	12"	K
Adlker	11"	K
Giant Shiner	16"	K
red tail	10"	K
mullet	14"	K

Sediment Station

BP-3 is located approximately 30' west of marker and about 60' off water line in about 3" of water

We seined but caught nothing but algae - area is too shallow for fish. We will try a seine in BP-2. No signs of fish at BP-3.

B set 3

crappie 4" K
bullhead 4" K

Sediment Station

BP-1 was done
in duplicate &
is located about
10' off the waterline
in about 5" of
water. The depth of
the core ranged
between 2 - 18".
soft bottom but
walkable with a
struggle.

began retrieving nets
at 0830 on
Oct 6

northern most first

~~BP~~ Set 1

Minnow trap	5	Green Sun fish	1½"
	1	Green Sunfish	4"

Gill net

White Sucker	21"	K
Sunfish	5"	K
Shad	6"	K
Shad	4"	K
Shiner	5"	K
Shiner	5"	K
Crappie White	5'	
Crappie White	5"	K
Shiner	5"	K
Brown Bullhead	7"	K
Brown Bullhead	4"	K

BP Set 2

Conducted several
seines at BP-1

caught many small
sunfish ~ 0.5 - 1.5"
as well as small guppy-like
mullet? and also a
few small shad.

1 seine yielded:
151 sunfish
50 minnows (mullet)?
1 shad
numerous fw. shrimp

618-875-3732

~~Another seine netted~~

2 seine yielded:
165 minnows (mullet)
157 sunfish
6 shad

general notes on
Borrow Pit 1 numerous
wildlife including raccoon
t
few prints

geese, egrets,
snapping turtles

water is deeper at
north end (~ 18-20"
& very shallow at south

Most larger fish
were in north
end in vicinity of
BP-1 - we saw no
action farther south

10/7/99 9:30
Lengths + Weights are estimated
Borrow Pit Set 4
Gill net along East Shore
1. Red Fin Sucker ?
Maybe a Drum
17 inches, 2 lbs.

2. Red Fin Sucker ?

18 inches 2 lbs

3. Red Fin Sucker ? (Release)
8 inches 0.5 lbs

4. Mullet
12 inches 1 lb
5. Gar
24 inches 4 lb

6. Large Mouth Bass
~~[illegible]~~
12 inches 1.5 lbs

7. Gar
24 inches 3.5 lbs

8. Mullet
14 inches 2 lbs

9. Mullet
14 inches 2 lbs

10. Red Fin
10 inches 1.5 lbs

11. Crappie
4 inches 0.5 lb

12. Crappie (Release - Eaten)
4 inches 0.5 lb

13. Brown Bullhead
8 inches 0.5 lb
White lesion ~~[illegible]~~ next to dorsal fin

14. Shiner
5 inches

15. Aligator Gar
~~[illegible]~~
20 inches 2 lbs
16. Brown Bullhead
6 inches 0.25 lbs
17. Shiner
5 inches 0.25 lbs
18. Crappie
6 inches 0.25 lbs
19. Crappie
4 inches 0.15 lbs
20. Shad
8 inches 0.75 lbs
21. Brown Bullhead
4 inches 0.15 lbs
22. Brown Bullhead
4 inches 0.15 lbs

23. Brown Bullhead
3 inches 0.10 lbs
24. Brown Bullhead
6 inches 0.75 lbs
25. Red Fin Sucker (Release)
24 inches 3.5 lbs
26. Brown Bullhead
6 inches 0.5 lbs
27. Mullet
15 inches 2 lbs

2nd Gillnet
running through middle of
Borrow Pit down mid-line
1. Red fin Sucker (Got Away)
14 inches 2 lbs
2. Red fin Sucker
~~[illegible] inches~~ ~~[illegible] lbs~~
14 inches 2 lbs.
3. Mullet
18 inches 3 lbs

4/ Red fin Sucker (Red tail)
12 inches 1.5 lbs

Very large Painted (?) Turtle
10 inches shell length
alive but sluggish - kept
in boat to bask - Released
Smaller Painted Turtle
4 inches caught alive
left in boat to bask

5. Crappie
5 inches 0.25 lb

6. Shiner
4 inches 0.25 lb

7. Shiner
3 inches 0.15 lb

8. Crappie
4 inches 0.25 lb

1. Crappie
3 inches 0.15 lb

Catfish Traps

1. Brown Bullhead ~~\$.50~~ \$.25
   4 inches

2. Green Sunfish \$.25/each
   3 inches

10/7/99

collected clams at
BP-2 + BP-3

- small amt of minnows
at F-3

Ref Area 1: Prairie Depot
Location 1 (north)
- seined + caught
29 mullet 1st catch
+3 mullet 2nd catch

plus: gars, crappies, longnose
drum, shad/shiner,
bullheads - kept all but
the mullet

used boat to collect
mullet - place was jumping

Ref Area I cont'd
collected 2 clams
collected plant sample
– not same spp.

creek was 25' across
with cut bank, colluvial
then flood, rolling eroded?
silt/clay bottom brown –
mix of silt with clay –

Ref Area I –
moved to 2nd location
to the south
sampled small pond
on south side of rd.
– many catfish, some
carp, some "shiners"; numerous mullet
– collected mostly catfish
and also collected
small shrimp

stream bed is wooded
along banks - some
stretches are dry -
we haven't seen the
vine-like plant -
need to look tomorrow
& also need to
check for snails

10-8-99 Ref Area
9:30 am Section I

after rainfall last night, the dried out section to the right of the flood gate/pump (standing on top of the levee) has small puddles and wet sections in it - took sediment samples in those; sediments are lumpy with lots of grey clay

Benthic invert. community samples taken further to the left of the flood gate in permanent (?) water-covered section of Prairie du Pont Creek

plant cover scarce around the edges; small plants with cocklebures (seeds that cling to

clothing) are most abundant
- sampled by Seine for more shrimp
- for sed. chem: taking ms/msd samples here

weather: overcast, light wind, about 60°F (open area, no tree cover)

10-8-99 Ref. Area 1.
11:30 am Section 2

- sampled by Seine for more shrimp at far section of the pool
- snails collected along left shoreline - fairly abundant but difficult to see in water (water is very turbid - green from algal bloom)

- sed-chem. taken at close left shore of pool (water-chem. samples taken at opposite side of same end)

benthic community samples small - most sediment is clay (solid) and supports no further biota

no emergent plants observed, several meters of mud separate shoreline vegetation from pool (i.e. not found: plant species sampled at other sampling locations)

10/6/99

1530 - set two gill nets at RA-2, a pond that was once a borrow pit. Standing water about 150 m by about 50 m

~~set~~

did seine along the shore. Caught numerous sunfish, a few bass, small drum, mooneye, crappie?

Collected two clams for invertebrate composite /

0515 retrieval seine
mullet: ~~HHT~~ /
white bass:
shad:
gar:
~~mullet~~
carp: /
walleye?: /

I pulled gill net
in: ~~[illegible]~~
mooneye: /
gar: /

REF 2-2

2	MULLET	14"	2lbs
4	CARP	14"	2.5 lbs
5	GAR	18"	
1	GAR	36"+	7lbs

gizzard - ~ 2-3" in
shad length
~~[illegible]~~ caught in
length seine: 40

l.m. bass - 4 larger fish
1 13" + 3 ~ 6"

Crappie - 2

Forage Fish (juvenile
lmb + crappie) ~~#~~ 48
2-3"

mooneye shiner
~ 7"   28

walleye: 3
1 - 15"
2 - ~6"

shiner (taillight): 1

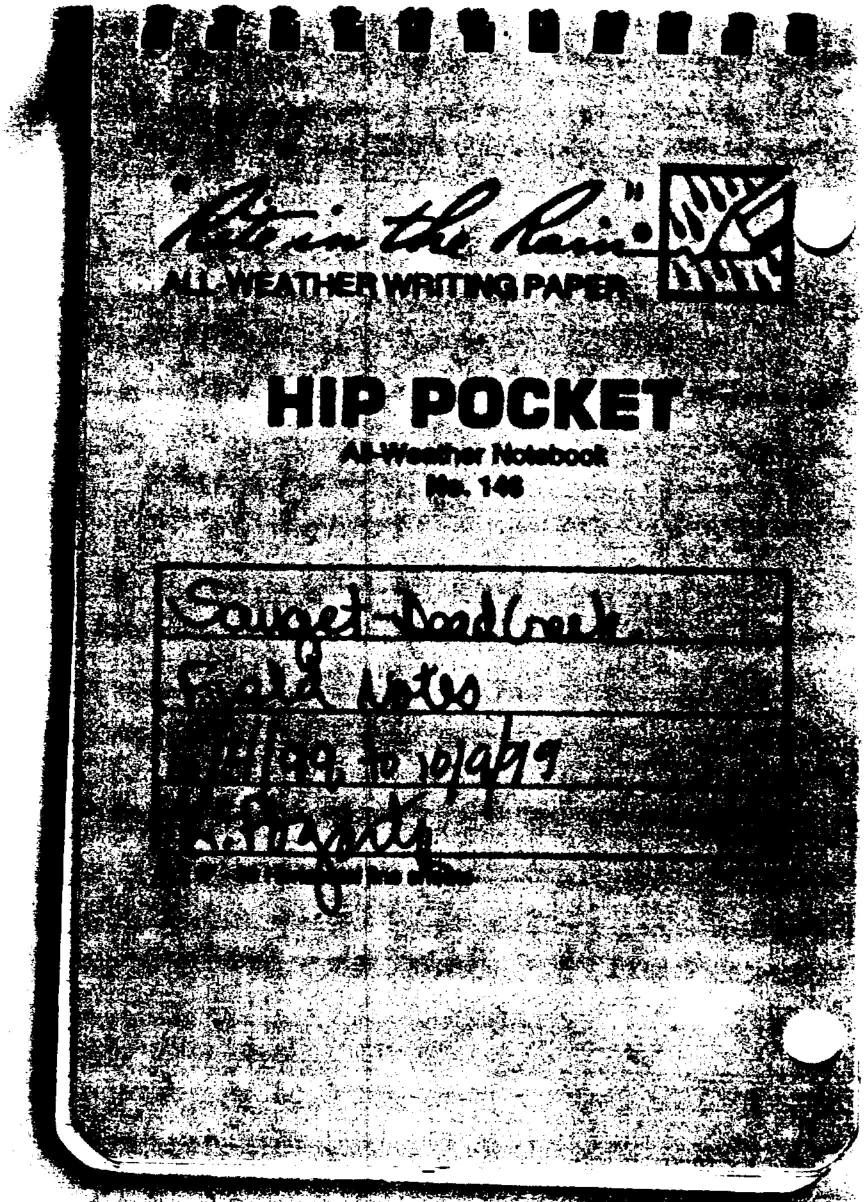
chub: 5

drum: 30

long nose gar: 3

johnny darter: 1

white bass: 6


Rite in the Rain
ALL-WEATHER WRITING PAPER
HIP POCKET
All-Weather Notebook
No. 146
Sauget-Dead Creek
Field Notes

10/4/99

Creek Section D-1

10:45

~~Field~~ Both field Crews

~~Ro~~ C. Menzie
D. Levin
S. Hoeppner
J. Perry - OBG

K. Fogarty.
M. Avakian
K. Cerreto
D. Amos

Steve Brodman - Weston

BTISS - D-[illegible] ~~[illegible]~~ snails
from 1

Sediment

BCOMM D-1-1 1 jar ea
D-1 2 1 jar ea
D-1 3 1 jar

PTISS - D-1 2 bags
the "buttercup" species - yellow flower

BTOX - D - 1 2 jars
9-10 eckmans = 1 chem + tox sample

Forage - D

Seine yielded 100's of forage fish minnows, darters, etc
also large tad poles
3 sp. catfish
minnow/darter
green sunfish
all $\frac{?}{8}$ ± 1" long

1210 D-2

snails for composite

Sed

2 Jars Toxicity BTOX D.2

2 bags for plants PTISS-2 L

TOX BTOX D-2 2 jars

added sed chem + TOC + gr size at this station

BCOMM-D-2-1

2-2

2-3

Lunch

13:55 D-3 with

MAvalier S. Brodman-Weston

J. Perry

D. Levin

K. Fogarty

~~most~~
all fish dead

catfish 6" dead
no live snails

C-2 K Loreto
B Amos
S Hoeppner

sed
fish
snails
plants

Snails
PT185 2 bags
Sed chem
BTOX 2 jars
BLOYM D-3-1
D-3-2
D-3-3

1420 C-3
C Menzie - see for notes
time etc. this sta

C-3 is close to dry
wet mud - no water
fish kill - bad smell - due
to lack of water

collected sed for chem
BTOX C-3 2 1 gal jars
BLOM C-1
C-2
C-3

C-2 15:30
BAmos
K Lerdelt
S Haepner

BTISS - C-2 snails
Forage C - catfish
wet mud w/ very shallow
puddle teaming fish
1" - 6"
K Lerreto notebook for
. station notes
PTISS.
sed c tox
C-2-1
C-2-2 } Bloomm
C-2-3
benthic sample scooped
from 6" x 6" x 2" area
no need for eckman

red buckets benthic C-2

16:15
C-1 no snails
PTISS-C-1 K.C.

BLOMM -1
-2
-3

D.Levin

Note: Plants & Fish
extra washing when
done

10/5/99 ~~Creek Section B~~

8:00 AM Helped OBG co do equipment rinsate

9:00 Section B
KAF, MA, DL
BA, SH, Joe Perry
Police Detail
C. Menzie located B-2 by GPS

9:45 C. Menzie D Levin - go to B-1 algae collected at B-1
PTISS - B-1 plants
BTOX - B-1
BLOMM - B-1-1
B-1-2
B-1-3

snails
sediment
TOC's on site

go to next 2pp

9:00 B-3

sed Chem + TOC: grain size

B-3-1 B COMM

3-2

3-3

PTISS B-3

snails B

fished 5x w/ seine

for ±10 fish

BTOX-3 sed tox

1-2' standing water

submerged aquatic veg

clayey seds - slippery

plover & killdeer

slight sheen from seds

B-1 continued
stream bed dry
±1" standing water
3' width of water
sed at original location but
100' S of water station

~~aq~~ submerged aquatic plants
potomegiton (?)
snails, frogs, damselfly
nymphs

clayey silt w/ interbedded
sand layers
observed & smelled oil sheen on sed
1245 visit Eric Kemper at B-3
~~collected snails~~
~~BCOMM B-1-1~~
~~B-1-2~~
~~B-1-3~~

B

1340 Past Lunch
MAvakian & DLevin Begin
M

1410 KFogarty, CMenzie
S ~~H~~oepfner

B-2
Clayey mud w/sand
lenses
snails
~~ea~~ submerged veg
plants
~~gee~~
Seine yields green sunfish
tad poles, etc!
heron observed

8

9/6/99 K Fogarty
M Avakian
B Amos
J Perry

Creek Section E-2 9:05AM

Creek Bed is ~~#~~ dry - no standing water -
there is a slight wet spot ≈ 100' downstream but it ~~is~~ has no standing water
lots of trash, tires, shopping carts, bikes, etc.
No Snails (1 large snail)
No Fish.
Collected Plants ~~B1~~ PTISS-E-2
BTOX-E-2
Sed Chem TOC + gr. size
BCMM-E-2-1
E-2-2
E-2-3
mud = clayey silt

E-1 9:50AM

Also dry - just wet mud
present
no snails
no fish
P-TISS E-1
BTOX - E-1
BCOMM - E-1-1
E-1-2
E-1-3
sed ~~Tox~~ : grain size

observed green backed-heron

clam shells in sample
clayey cohesive mud
clayey silt

E - ~~2~~ 3 12:10

Standing water at this location

Very soft mud

no snails

no veg of the same species

~~2~~

150's of E-2 dumps were ~~~~ reported by OBG to be full of fish - on inspection it was full of ~~~~ tadpoles - no snails observed

D-netted - no fish or anything else

Very different area - more of a drainage channel

with overhanging trees)
duck weed in big

Location is erroneous
E-2 from recon
N of culvert - renamed
E-3 now!

E - no snails no fish

E - BTOX E-3
sed chem + TOC + gr size
MS/MSD on sed & TOC
BCDM/m E-3-1
E-3-2
E-3-3
Steve Brodman - visits
police officer
Kimberly visits

E Plants — Need to be washed

in AM and then frozen

Done 10/7/99

~~BP-2~~ 10/7/99

Borrow Pit

~~B Mate~~

K. Cerreto } fish
D. Lew

M. Arakian
B. Amos
J Perry
S. Hoeppner
E. Fogarty

~~9:30~~ BP-2 where N-most powerlines cross borrow pit

clams collected

Clayey cohesive mud - some
[illegible] mats
[illegible] submerged & emergent
veg.
large clams - [illegible]
few small snails
F-3 at [illegible] 15
collected veg
~~[illegible]~~ ~~[illegible]~~ no snails etc

Also collected BP-3 clams
@ 12:15

water covered w/ duckweed
1-3" of water
under poplars/aspin
plants on all sides
deer tracks dog tracks
skunk & raccoon tracks
small frogs
very few snails

lots of chironomids

15:00 MA KC JP KF
F-1

Narrow creek bed very
~~standing pools~~
standing water
PT 155 -
Large amounts of ~~[illegible]~~
yellow flowered plants
Some duck weed
- riparian zone
~~note to~~
~~[illegible]~~ tiny chironomids
benthic samples
no snails obs ~~[illegible]~~
- could be present

SBLF - ~~[illegible]~~ HABITAT [illegible]

tiny fish observed –
± 1/2" to 1" long
return w/ D net?

1610 F2 – 2
along levee through
soybean field to creek

creek ±10 wide
up to 1.5' water
soft mud bottom
poplars (cottonwood?) trees
in riparian zone
many small frogs
bird & deer tracks
no snails obs.

Call Aquatech re Fedex
Saturday shipment

10/3/94 RF-3-1
Creek station
KAF, MA, JT, SH

1430
Ref creek
similar in appearance
to ~~the~~ [illegible]
Dead Creek

Very fine silty mud —
lost 3 people in it

collected very deep
through fish [illegible]
very abundant
Snails

sed tox & chem (chem dupe)
creek channel
dry in spots
between 2 fields
very narrow rip. zone between
fields & creek
evidence of beaver activity at
road culvert
~~read~~ used using blackbirds

Collected Shrimp
approx. biomass:

Ref 2-2 (Pond)

~ 80g

Ref 2-1 (Creek)

~ 60g

Ref 1 - 1+2 (Prairie du Pont
Creek)

~ ≥80g

PDC 1-2 (Ref 1)

~ 20-40g

11/1/99 K. Fogarty
D. Levin
P. Downey

10:00
Borrow Pit
Water level is down at least 1'
from last site visit
collected by seine & dip net
no point to electroshock

Water depth less than 1'
Many dead & dying fish
carp, "mullet" & etc.

Photos 27 - 16 low water level
& dead fish
saw kestrel   seined 1x & no LMB
heard hawks, Collected 2 LMB live
Killdeer   & several dead bg
Kingfisher picking them up.
Saw many gulls, great blue heron

1400 CPD Creek
water is about to [illegible]
out
Many fish observed
- ~~[illegible]~~
silver carp, etc.
few small fish observed
~~[illegible]~~ silver carp very abundant
& jumping

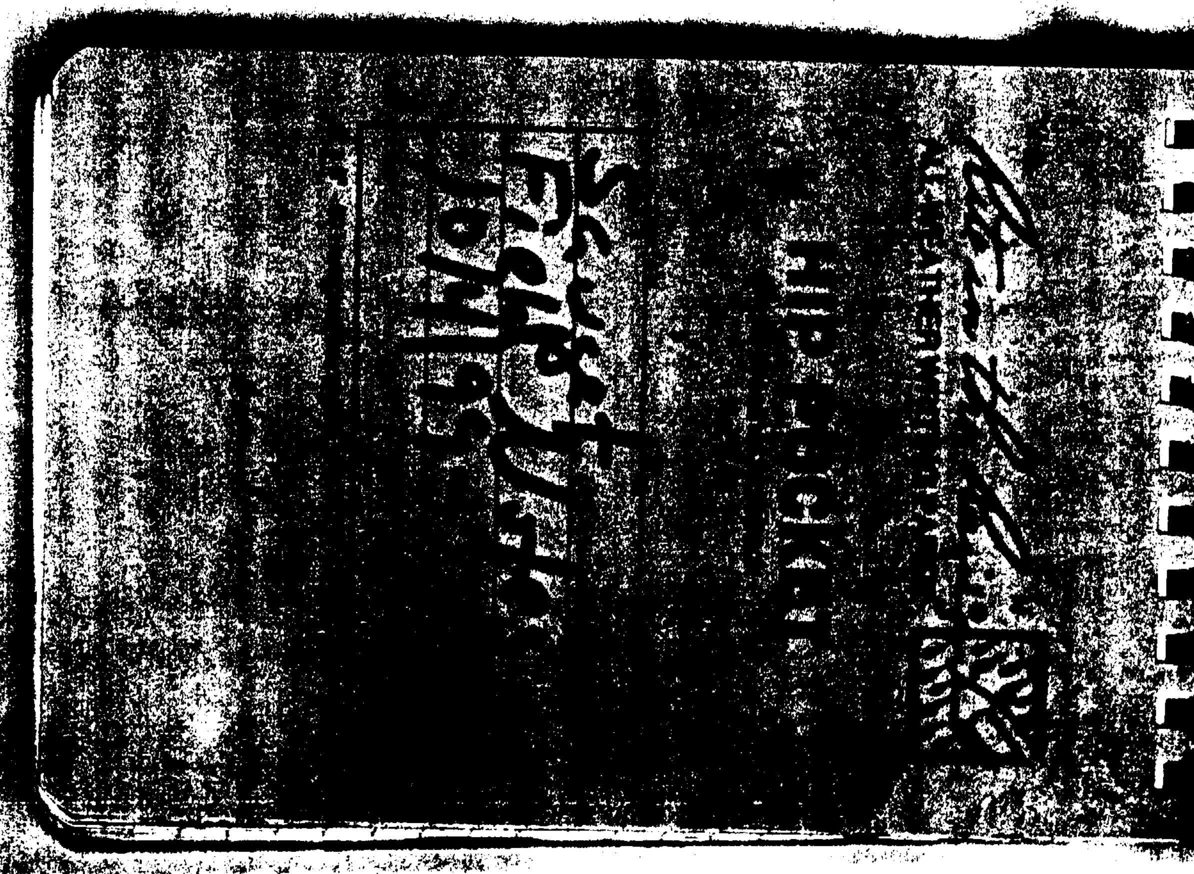
seined ~~[illegible]~~ 2 x covering
± 2/3 of water body to
collect required fish

Vegetation has died back -
due to time of year

11/2/99 K. Fogarty
D Levin, P Downey
11:00
Ref Area 2-2
Rest of Photos
Water is way down
Pool ± 100' B remains
on-site 10:30 - Eric Kemper Weston
small shrimp observed
- 3 LMB
- 8 crappie
1 bullhead
collected 1 LMB per seine
- Met Mr. Garlet - owner
gave him 2 crappie
observed, paddlefish, shovel nose
1530 - launched boat in
borrow pit
Eric Kemper departed

~~collected~~

14:00 Seined ~~6~~ 3 times
collected 2LMB -
a 100's of fish per seine
mostly silver carp - also
other carp, bullheads,
etc.



10/4 15:26

Creek Sector C Susana, Ken, Ben

C-7 3 water puddles loaded w/ catfish and frog larvae. No living forage fish or piscivorous fish seen. Plant samples + snail samples collected. Toxicity samples collected

Creek Sector C-~~1~~ 1

No standing water Some wet mud. No fish or snails found. Plant samples collected

GPS Coordinates for
Site M

90° 10 22.7539 W
38° 35 07.44416 N

Weigh Point is MA1

3.27 Benthic Macroinvertebrates for Community Evaluation

3.27.1 Rationale/Design

The analysis of benthic macroinvertebrate community structure will be used to support the assessment of possible effects on benthic invertebrates. The samples will be analyzed for taxa richness, abundance, percent dominant taxa, and community composition.

3.27.2 QA/QC Procedures

Three samples were collected from each location and analyzed separately to provide a measure of within-station variability. Given this sampling scheme, field duplicates were not necessary. The remaining types of QA/QC samples (equipment blanks, trip blanks, and MS/MSD samples) are not appropriate for benthic macroinvertebrate community analysis.

3.27.3 Field Procedures

Prior to beginning fieldwork, Preparatory Inspection Meetings were held that were attended by a representative of each of the interested parties (Section 3.26.4).

Samples for benthic macroinvertebrate community analysis were collected at the same times and locations as the toxicity bioassay and chemical analysis samples using a tall Eckman grab. The contents of each grab were emptied into a bucket and then sieved in a 0.5-mm sieve. The material remaining on the sieve (sediment, detritus, plant material and organisms) was placed in a wide-mouth plastic jar and preserved with 70% isopropyl alcohol.

Chain-of-custody forms were completed for each sample. Samples were sent to Aquatec Biological Sciences in South Burlington, Vermont at the end of the main sampling event.

3.27.4 Documentation

Table 3.27.4 lists the sample stations for benthic macroinvertebrate community samples. Figure 4 depicts the locations of the benthic macroinvertebrate community stations which were collocated with sediment chemistry and toxicity stations. The chain-of-custody forms are in Section 3.27.4.1.

The Daily Work Logs, Work Forecasts, and Safety Meeting Forms for the Main Sampling Event are in Section 3.26.4.3 and the field notes are in Section 3.26.4.4.

Table 3.27.4
List of Sample Locations and Dates for
Samples Collected for Benthic Community Analysis
Sauget Area I

Sample ID	Station	Date of Sample
COMM B-1-1	Creek Sector B-1	10/5/99
COMM B-1-2	Creek Sector B-1	10/5/99
COMM B-1-3	Creek Sector B-1	10/5/99
COMM B-2-1	Creek Sector B-2	10/5/99
COMM B-2-2	Creek Sector B-2	10/5/99
COMM B-2-3	Creek Sector B-2	10/5/99
COMM B-3-1	Creek Sector B-3	10/5/99
COMM B-3-2	Creek Sector B-3	10/5/99
COMM B-3-3	Creek Sector B-3	10/5/99
COMM M-1	Site M	10/5/99
COMM M-2	Site M	10/5/99
COMM M-3	Site M	10/5/99
COMM C-1-1	Creek Sector C-1	10/4/99
COMM C-1-2	Creek Sector C-1	10/4/99
COMM C-1-3	Creek Sector C-1	10/4/99
COMM C-2-1	Creek Sector C-2	10/4/99
COMM C-2-2	Creek Sector C-2	10/4/99
COMM C-2-3	Creek Sector C-2	10/4/99
COMM C-3-1	Creek Sector C-3	10/4/99
COMM C-3-2	Creek Sector C-3	10/4/99
COMM C-3-3	Creek Sector C-3	10/4/99
COMM D-1-1	Creek Sector D-1	10/4/99
COMM D-1-2	Creek Sector D-1	10/4/99
COMM D-1-3	Creek Sector D-1	10/4/99
COMM D-2-1	Creek Sector D-2	10/4/99
COMM D-2-2	Creek Sector D-2	10/4/99
COMM D-2-3	Creek Sector D-2	10/4/99
COMM D-3-1	Creek Sector D-3	10/4/99
COMM D-3-2	Creek Sector D-3	10/4/99
COMM D-3-3	Creek Sector D-3	10/4/99
COMM E-1-1	Creek Sector E-1	10/6/99
COMM E-1-2	Creek Sector E-1	10/6/99
COMM E-1-3	Creek Sector E-1	10/6/99
COMM E-2-1	Creek Sector E-2	10/6/99
COMM E-2-2	Creek Sector E-2	10/6/99
COMM E-2-3	Creek Sector E-2	10/6/99
COMM E-3-1	Creek Sector E-3	10/6/99
COMM E-3-2	Creek Sector E-3	10/6/99
COMM E-3-3	Creek Sector E-3	10/6/99
COMM F-1-1	Creek Sector F-1	10/7/99
COMM F-1-2	Creek Sector F-1	10/7/99
COMM F-1-3	Creek Sector F-1	10/7/99
COMM F-2-1	Creek Sector F-2	10/7/99
COMM F-2-2	Creek Sector F-2	10/7/99
COMM F-2-3	Creek Sector F-2	10/7/99
COMM F-3-1	Creek Sector F-3	10/7/99
COMM F-3-2	Creek Sector F-3	10/7/99
COMM F-3-3	Creek Sector F-3	10/7/99

Table 3.27.4
List of Sample Locations and Dates for
Samples Collected for Benthic Community Analysis
Sauget Area I

Sample ID	Station	Date of Sample
COMM BP-1-1	Borrow Pit 1	10/6/99
COMM BP-1-2	Borrow Pit 1	10/6/99
COMM BP-1-3	Borrow Pit 1	10/6/99
COMM BP-2-1	Borrow Pit 2	10/7/99
COMM BP-2-2	Borrow Pit 2	10/7/99
COMM BP-2-3	Borrow Pit 2	10/7/99
COMM BP-3-1	Borrow Pit 3	10/7/99
COMM BP-3-2	Borrow Pit 3	10/7/99
COMM BP-3-3	Borrow Pit 3	10/7/99
COMM PDC-1-1	Reference Area 1-1 (Old Prairie DuPont Creek)	10/8/99
COMM PDC-1-2	Reference Area 1-1 (Old Prairie DuPont Creek)	10/8/99
COMM PDC-1-3	Reference Area 1-1 (Old Prairie DuPont Creek)	10/8/99
COMM PDC-2-1	Reference Area 1-2 (Old Prarie DuPont Creek)	10/8/99
COMM PDC-2-2	Reference Area 1-2 (Old Prarie DuPont Creek)	10/8/99
COMM PDC-2-3	Reference Area 1-2 (Old Prarie DuPont Creek)	10/8/99
COMM Ref2-1-1	Reference Area 2-1 (Long Slash Creek)	10/8/99
COMM Ref2-1-2	Reference Area 2-1 (Long Slash Creek)	10/8/99
COMM Ref2-1-3	Reference Area 2-1 (Long Slash Creek)	10/8/99
COMM Ref2-2-1	Reference Area 2-2	10/8/99
COMM Ref2-2	Reference Area 2-2	10/8/99
COMM Ref2-3	Reference Area 2-2	10/8/99

3.27.4.1 Chain-of-Custody Forms

CHAIN OF CUSTODY RECORD

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

Project No.: 648
Project Name: Dead Creek
Project Location: Sauget, IL

DATE: 10/19/99

SAMPLERS: Menzie, Fogarty, Avakian, Levin, Cerreto, Hoeppner, Amos, Perry

COMM

SAMPLE ID	Date	Time Comp.	Grab	Station Locations	No. of Containers	Benthic Comm.					NOTES
B-1-1	10/5	9:45	✓	Creek Sector B-1	1	✓					All Reserved in
B-1-2	10/5	9:45	✓	"	1	✓					70% Isopropyl
B-1-3	10/5	9:45	✓	"	1	✓					Alcohol
B-2-1	10/5	14:10	✓	Creek Sector B-2	1	✓					
B-2-2	10/5	14:10	✓	"	1	✓					
B-2-3	10/5	14:10	✓	"	1	✓					
B-3-1	10/5	9:00	✓	Creek Sector B-3	1	✓					
B-3-2	10/5	9:00	✓	"	1	✓					
B-3-3	10/5	9:00	✓	"	1	✓					
M-1	10/5	13:40	✓	Site M	1	✓					
M-2	10/5	13:40	✓	"	1	✓					
M-3	10/5	13:40	✓	"	1	✓					
C-2-2	10/4	15:30	✓	Creek Sector C-2	1	✓					
C-3-3	10/4	14:20	✓	Creek Sector C-3	1	✓					
F-3-3	10/7	10:45	✓	Creek Sector F-3	1	✓					(Green Cooler)

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Kenneth M Cerreto	10/25/99		[signature]	10/26/99	15:00

Remarks: Red Cooler
69 samples total
B-F and BP → 9 each
PDC + Ref2 → 6 each
M → 3

Laboratory: Aquatec
Phone: (802) 860-1638
Contact Person: Phil Downey

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
648	Dead Creek	Sauget, IL

DATE: 10/19/99

SAMPLERS Menzie, Fogarty, Avakian, Levin, Carreto, Hoeppner, Amos, Perry

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

COMM

SAMPLE ID	Date	time ~~comp.~~	Grab	Station Locations	No. of Containers	Benthic Comm.					NOTES
C-1-1	10/4	16:15	✓	Creek Sector C-1	1	✓					All preserved in 70%
C-1-2	10/4	16:15	✓	"	1	✓					Isopropyl Alcohol
C-1-3	10/4	16:15	✓	"	1	✓					
C-2-1	10/4	15:30	✓	Creek Sector C-2	1	✓					
C-2-3	10/4	15:30	✓	"	1	✓					
C-3-1	10/4	14:20	✓	Creek Sector C-3	1	✓					
C-3-2	10/4	14:20	✓	"	1	✓					
Ref2-1-1	10/8	14:30	✓	Reference Location 2-1	1	✓					
Ref2-1-2	10/8	14:30	✓	"	1	✓					
Ref2-1-3	10/8	14:30	✓	"	1	✓					
Ref2-2-1	10/9	10:30	✓	Reference Location 2-2	1	✓					
Ref-2-2	10/9	10:30	✓	"	1	✓					
Ref-2-3	10/9	10:30	✓	"	1	✓					
PDC-1-1	10/8	9:30	✓	Prarie DuPont Creek - 1	1	✓					
PDC-1-2	10/8	9:30	✓	"	1	✓					
PDC-1-3	10/8	9:30	✓	"	1	✓					
PDC-2-1	10/8	11:20	✓	Prarie DuPont Creek - 2	1	✓					
PDC-2-2	10/8	11:20	✓	"	1	✓					

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time	Remarks:
Kenneth M Carreto	10/25/99		J Gilbert	10/26	15:00	White Cooler
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time	
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time	

Laboratory: Aquatec

Phone: (802) 860-1638

Contact Person: Phil Downey

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
648	Dead Creek	Sauget, IL

DATE: 10/19/99

SAMPLERS Menzie, Fogarty, Arakian, Lewis Cerreto Hoeppner, Amos, Perry

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

Analyses Required

SAMPLE ID	Date	Time Comp.	Grab	Station Locations	No. of Containers	Benthic Comm.					NOTES
PDC-2-3	10/8	11:20	✓	Prarie DuPont Creek -2	1	✓					(In White Cooler)
BP-1-1	10/6	11:30	✓	Borrow Pit Lake -1	1	✓					
BP-1-2	10/6	11:30	✓	Borrow Pit Lake -1	1	✓					All Preserved in
BP-1-3	10/6	11:30	✓	"	1	✓					70% Isopropyl Alcohol
BP-2-2	10/6	9:30	✓	Borrow Pit Lake -2	1	✓					
BP-2-3	10/6	9:30	✓	"	1	✓					
BP-3-2	10/6	16:30	✓	Borrow Pit Lake -3	1	✓					
BP-3-3	10/6	16:30	✓	"	1	✓					
BP-3-1	10/6	16:30	✓	"	1	✓					
D-1-2	10/4	10:45	✓	Creek Sector D-1	1	✓					
D-1-3	10/4	10:45	✓	Creek Sector D-1	1	✓					
BP-2-1	10/6	9:30	✓	Borrow Pit Lake -2	1	✓					
D-2-3	10/4	12:10	✓	Creek Sector D-2	1	✓					
D-1-1	10/4	10:45	✓	Creek Sector D-1	1	✓					
E-1-1	10/5	9:50	✓	Creek Sector E-1	1	✓					
E-1-2	10/5	9:50	✓	"	1	✓					
E-1-3	10/5	9:50	✓	"	1	✓					
E-2-1	10/5	9:05	✓	Creek Sector E-2	1	✓					

OMM

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Kenneth M Cerreto	10/25/99		J Colbert	10/26	15:00
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Remarks: Blue Cooler

Laboratory: Aquatec

Phone: (802) 860-1638

Contact Person: Phil Downey

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:	MENZIE-CURA & ASSOCIATES, INC.
648	Dead Creek	Sauget, IL	1 COURTHOUSE LANE, SUITE 2, CHELMSFORD, MA 01824
DATE: 10/19/99		Analyses Required	TEL: 978/453-4300 FAX: 978/453-7260
SAMPLERS Menzie, Fogarty, Arakian, Levin, Ceriett, Hoeppner, Amos, Perry			

SAMPLE ID	Date	Time ~~Comp.~~	Grab	Station Locations	No. of Containers	Benthic Comm.					NOTES
E-2-2	10/5	9:05	✓	Creek Sector E-2	1	✓					(Blue Cooler)
E-2-3	10/5	9:05	✓	Creek Sector E-2	1	✓					"
E-3-1	10/5	12:10	✓	Creek Sector E-3	1	✓					"
E-3-2	10/5	12:10	✓	"	1	✓					"
E-3-3	10/5	12:10	✓	"	1	✓					"
D-2-1	10/4	12:10	✓	Creek Sector D-2	1	✓					
D-2-2	10/4	12:10	✓	Creek Sector D-2	1	✓					All preserved in
D-3-1	10/4	13:55	✓	Creek Sector D-3	1	✓					70% Isopropyl Alcohol
D-3-2	10/4	13:55	✓	"	1	✓					
D-3-3	10/4	13:55	✓	"	1	✓					
F-1-1	10/7	15:00	✓	Creek Sector F-1	1	✓					
F-1-2	10/7	15:00	✓	"	1	✓					
F-1-3	10/7	15:00	✓	"	1	✓					
F-2-1	10/7	16:10	✓	Creek Sector F-2	1	✓					
F-2-2	10/7	16:10	✓	"	1	✓					
F-2-3	10/7	16:10	✓	"	1	✓					
F-3-1	10/7	10:45	✓	Creek Sector F-3	1	✓					
F-3-2	10/7	10:45	✓	Creek Sector F-3	1	✓					

500MM

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time	Remarks:
Kenneth M Ceriett	10/25/99		J. Colbert	10/26	15:00	Green Cooler
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time	
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time	

Laboratory: Aquatec

Phone: (802) 860-1638

Contact Person: Phil Downey

3.28 Invertebrate Collection for Tissue Analysis

3.28.1 Rationale/Design

Macroinvertebrates were collected in each sector of Dead Creek, the Borrow Pit, and the reference locations for tissue analysis to assess possible effects on benthic invertebrates and the organisms that feed on them. Three different macroinvertebrates were sampled, clams, snails, and shrimp.

Prior to the reconnaissance survey and field sampling, crayfish were included among the organisms to be sampled for tissue analysis. It was assumed that crayfish would be present. During both the reconnaissance survey and the field sampling program, no crayfish were collected or observed in any of the sampling locations. Collection efforts included baited minnow traps and beach seining. Shrimp were sampled instead of crayfish for tissue analysis. Shrimp were selected as the best replacement for crayfish as they are both members of the same order, decapoda, and because shrimp were abundant in the areas where they occurred. The deviation log and memorandum describing this change is in Section 3.28.4.1.

3.28.2 QA/QC Procedures

Additional clams were taken from Station 1 in the Borrow Pit to provide a field duplicate and MS/MSD sample ((CLAMBP-1 COMP-01). Sample CLAMBP-3 COMP-01 from the Borrow Pit was split with USEPA representatives. Trip blanks are not necessary for tissue samples. The beach seines were not considered a quantifiable source of cross-contamination and washing all invertebrates sampled further reduced the possibility of cross-contamination. This eliminated the need for an equipment rinsate blank from the beach seines. The deviation log describing this decision is in Section 3.28.4.1.

3.28.3 Field Procedures

Prior to beginning fieldwork, Preparatory Inspection Meetings were held that were attended by a representative of each of the interested parties (Section 3.26.4).

Snails (*Physella heterostropha*) were collected from creek sectors B, C, and D, the Old Prairie du Pont Creek reference area (reference area 1), and the Long Slash Creek reference area (reference area 2-1). Snails were collected by picking them by hand from the substrate. Clams (*Pyganodon grandis*) were collected by hand and beach seine and were found at the Borrow Pit, reference area 1, and reference area 2-2 (Photo 3.28.4.3.1). Clams were placed in a cooler full of site water and were allowed to depurate for 24 hours. This allows for a more accurate tissue analysis by reducing the amount of sediment in the gut. Shrimp (*Palaemonetes kadiakensis*) were collected by beach seine at the Borrow Pit and both reference locations (Photo 3.28.4.3.2). The total amount of tissue mass of shrimp collected from the Borrow Pit and reference areas was smaller than required for three samples from the Borrow Pit and two each from the two reference areas. Therefore, one composite sample was created for the Borrow Pit and one for each reference area. The deviation log for this decision is in Section 3.28.4.1. Biota samples were frozen on the day of collection (or after depuration in the case of clams). Samples were shipped frozen on dry ice to the laboratory for analysis.

3.28.4 Documentation

Table 3.28.4 lists the locations where macroinvertebrates were sampled. The deviation logs for this task are in Section 3.28.4.1, photographs are in Section 3.28.4.2, and the chain-of-custody forms are in Section 3.28.4.3.

The Daily Work Logs, Work Forecasts, and Safety Meeting Forms for the Main Sampling Event are in Section 3.26.4.3 and the field notes are in Section 3.26.4.4.

Table 3.28.4
List of Invertebrate Sample Stations, Dates, and QA/QC Samples
Sauget Area I

Invertebrate Type	Sample ID	Station	Chain of Custody ID	Date of Collection	Number of organisms or (weight in grams)	QA/QC Samples
Snails	SNCS-B COMP 1	Creek Sector B	BTISS-B	10/5/99	(75.3 g)	
		Site M			None present	
	SNCS-C COMP 1	Creek Sector C	BTISS-C	10/4/99	(166 g)	
	SNCS-D COMP 1	Creek Sector D	BTISS-D	10/4/99	(233 g)	
		Creek Sector E			None present	
		Creek Sector F			None present	
		Borrow Pit		10/4/99	None present	
	SN REF1 COMP 1	Reference Area 1 (Old Prarie DuPont Creek)	BTISS-PDC1+2	10/8/99	(84.4 g)	
	SN REF 2-1 COMP 1	Reference Area 2-1 (Long Slash Creek)	BTISS-Ref2-1	10/8/99	(229.1 g)	
		Reference Area 2-2			None present	
Clams	CLAMBP-1 COMP-01	Borrow Pit 1	CLAMBP-1	10/6/99	4	
	CLAMBP-1 COMP-02	Borrow Pit 1	CLAMBP-1	10/6/99	3	
	CLAMBP-1 COMP-03	Borrow Pit 1	CLAMBP-1	10/6/99	4	
	CLAMBP-2 COMP-01	Borrow Pit 2	CLAMBP-2	10/7/99	2	
	CLAMBP-3 COMP-01	Borrow Pit 3	CLAMBP-3	10/6/99	3	Split with Weston
	CLAMREF1 COMP-01	Reference Area 1-1 (Old Prarie DuPont Creek)	CLAM Ref-1-1	10/8/99	3	
	CLAMREF2-2 COMP-01	Reference Area 2-2	CLAM Ref2-2Comp 1	10/8/99	3	
	CLAMREF2-2 COMP-02	Reference Area 2-2	CLAM Ref2-2 Comp 1	10/8/99	3	
Shrimp	SHRIMP BP COMP	Borrow Pit	SHRIMP BP-1-1, SHRIMP BP-1-2, SHRIMP BP-1-3	10/6/99	(89 g)	
	SHRIMP REF1 COMP	Reference Area 1 (Old Prairie du Pond Creek)	SHRIMP PDC-1-2	10/7 and 10/8/99	(74.4 g)	
	SHRIMP REF2 COMP	Reference Area 2 (Long Slash Creek)	SHRIMP Ref2-1	10/8/99	(75 g)	

3.28.4.1 Deviation Logs

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION / COMPANY: C. Menzie / Menzie - Cura DATE 10/4/99

HEALTH & SAFETY APPROVAL REQUIRED: YES: ________ NO: ✓

PROJECT NAME Solutia Area I PROJECT LOCATION Dead Creek

WEATHER cloudy - sunny PRECIPITATION none TEMPERATURE 50-70°F

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 7

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT; TIME; MANPOWER; ETC.):
7. REMARKS:

1. Ecological sampling
2. QA - rinsate samples for collections of plants, inverts, fish
3. plants + inverts are collected by hand + subsequently washed

fish are collected by seine and subsequently washed; the seine is not a source of contamination that needs to be quantified

4. rinsate blanks will be obtained only for the Eckman, bowl, spoon as a single sample

5 see 4

6. none

7. decision was discussed with Steve Brodman of Weston prior to implementation

Charles Menzie / [signature] — PRINTED NAME / SIGNATURE OF PREPARER

Kimberly Perry / [signature] 10/4/99 — PRINTED NAME / SIGNATURE OF SOLUTIA REP / DATE

DATE

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

PRINTED NAME / SIGNATURE OF USEPA REP / DATE

Given to Weston 10/4/99 20:45 KMP

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION / COMPANY: C. Menzie / MCA DATE 10/7/99

HEALTH & SAFETY APPROVAL REQUIRED: YES: ________ NO: ✓

PROJECT NAME Solutia Area I PROJECT LOCATION Dead Creek

WEATHER sunny PRECIPITATION — TEMPERATURE 60 - 75

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 7

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT; TIME; MANPOWER; ETC.):
7. REMARKS:

1. collection of cray fish
2. 4.8 of Menzie - Cura Eco QAPP
3. no cray fish being caught in traps or seines no visual evidence in Borrow Pit
4. Substitute f.water shrimp for cray fish depending on what is seen in reference locations
5. seine
6. none anticipated
7. shrimp is dominant crustacean in Borrow Pit + important in diet of fish; it also would likely be reflective of tissue concentrations in cray fish - probably a good surrogate

Given to Weston 10/7/99 0918

Charles Menzie / [signature]

PRINTED NAME / SIGNATURE OF PREPARER

Kimberly Perry / [signature] / 10/7/99

PRINTED NAME / SIGNATURE OF SOLUTIA REP / DATE

DATE

PRINTED NAME / SIGNATURE OF USEPA REP / DATE

IF ADDITIONAL SPACE IS REQUIRED,

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION / COMPANY: Katherine Fogarty DATE 11/3/99

Menzie-Cura & Associates, Inc.

HEALTH & SAFETY APPROVAL REQUIRED: YES: ______ NO: ✓

PROJECT NAME Dead Creek, Sauget Area I PROJECT LOCATION Sauget/Cahokia, Ill

WEATHER NA PRECIPITATION NA TEMPERATURE NA

NUMBER OF HOURS WORKED NA NUMBER OF EMPLOYEES NA

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT; TIME; MANPOWER; ETC.):
7. REMARKS:

1. Ecological Risk Assessment of Dead Creek
2. Ecological Risk Assessment QAPP Section 4.8
3. Crayfish are not available in the Borrow Pit.
4. Shrimp will be substituted for crayfish. They are available.
5. seines
6. none
7. none

Given to Weston 11/5/99 0730 PAP

Katherine Fogarty / Katherine A Fogarty
PRINTED NAME / SIGNATURE OF PREPARER

Kimberly Perry / Kimberly Perry 11/5/99
PRINTED NAME / SIGNATURE OF SOLUTIA REP / DATE

11/3/99
DATE

PRINTED NAME / SIGNATURE OF USEPA REP / DATE

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Menzie-Cura & Associates, Inc.
One Courthouse Lane
Suite 2
Chelmsford, Massachusetts 01824
Telephone (978) 453-4300
Fax (978) 453-7260

MEMORANDUM

Date: November 3, 1999
File: 648B
To: Kimberly Perry, Solutia
From: Katherine Fogarty K. Fogarty
Subject: Minor Changes to Ecological Risk Assessment Workplan for Dead Creek

The workplan called for collection of one composite sample of benthic macroinvertebrates for tissue analysis from each creek section, the Borrow Pit, Site M, and the two reference areas. Large freshwater clams were abundant in the Borrow Pit and reference areas and were sampled there. Small snails were abundant in some of the creek sections and in the second creek reference area and were sampled there. Invertebrates large enough to provide mass for tissue analysis were not observed at creek sections E or F, or Site M.

Given to weston 11/5/99 0730 KOP

DEV-017B

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION / COMPANY: C. Menzie/MCA DATE 2/18/00

HEALTH & SAFETY APPROVAL REQUIRED: YES: ________ NO: ✓

PROJECT NAME SAUGET AREA I PROJECT LOCATION Dead Creek

WEATHER ________ PRECIPITATION ________ TEMPERATURE ________

NUMBER OF HOURS WORKED ________ NUMBER OF EMPLOYEES ________

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT: TIME: MANPOWER: ETC.):
7. REMARKS:

1. Crayfish tissue analysis

2. Section 11 of SAP - species and number of composites

3. Crayfish were not observed in either the Borrow Pit or reference areas. Small shrimp were collected. Sufficient numbers were obtained to make 1 composite in the Borrow Pit and 1 in each reference area. This is a deviation from 3 composites of crayfish in the Borrow Pit and 2 composites of crayfish in each reference area

4. Single composites of shrimp will be used for each of three water bodies. This will provide insight into contaminant levels in crustacea.

5. None special

6 None envisioned

7. None

Charles Menzie / [signature]
PRINTED NAME / SIGNATURE OF PREPARER

2/18/00
DATE

Kimberly Perry / [signature] 3/29/00
PRINTED NAME / SIGNATURE OF SOLUTIA REP / DATE

PRINTED NAME / SIGNATURE OF USEPA REP / DATE

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

3.28.4.2 Photographs

Photo 3.28.4.3.1. *Pyganodon grandis.* Specimen in hand is about 5 inches across (October 1999).

Photo 3.28.4.3.2. *Palaemonetes kadiakensis* Diameter of sieve is 8 inches (October 1999).

3.28.4.3 Chain-of-Custody

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
648 B	Dead Creek - Sauget Area 1	Sauget/Cahokia, Ill

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

DATE: 10/9/99

SAMPLERS C. Menzie, K. Fogarty

Analyses Required

SAMPLE ID	Date	Time ~~Comp.~~	Comp ~~Grab~~	Station Locations	No. of Containers	Notes 1 & 2					NOTES
BTISS-B	10/5/99	14:20	X	Creek Section B	2	✓					Do duplicate/MS/MSD on ~~#~~ sample where
BTISS-C	10/4/99	14:20	X	Creek Section C	2	✓					volume of tissue
BTISS D	10/4/99	10:45	X	Creek Section D	2	✓					permits
BTISS-Ref	10/8/99	14:00	X	Reference Creek	2	✓					
BTISS PDCT	10/4/99	9:30	X	Prairie du Pont	2	✓					

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Katherine A Fogarty	10/9/99	1400			
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Remarks:
① samples frozen day of collection
② analysis = SVOCs, PCBs, dioxins, herbicides, pesticides, metals, cyanide

Laboratory: Savannah

Phone:

Contact Person: Betsy Beauchamp

Snails - ready to go

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
648 B	Dead Creek – Sauget Area I	Sauget / Cahokia, Ill.

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

DATE: 10/9/99

SAMPLERS C Menzie & K Fogarty

Analyses Required

SAMPLE ID	Date	Time Comp.	comp Grab	Station Locations	No. of Containers	Notes 1 & 2					NOTES
SHMP BP-1-1	10/6/99	11:30	X	Borrow Pit	1	X					
SHRIMP BP-1-2	↓	"	X	↓	1	X					
SHRIMP BP-1-3	↓	"	X	↓	1	X					
SHRIMP Ref2-1	10/8/99	16:00	X	Ref Creek	1	X					
SHRIMP PDX-1-2	10/7/99	9:20	X	Prairie du Pont	1	X					
SHRIMP PDX-1-2	10/8/99	9:30	X	" " "	1	X					

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Katherine A Fogarty	10/9/99	1400			
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Laboratory: Savannah Labs

Phone:

Contact Person: Betsy Beauchamp

Remarks:
① Samples frozen on day collected
② Analysis = SVOCs, dioxin, PCBs, herbicides, pesticides, metals, cyanide

shrimp done

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
648B	Dead Creek - Sauget Area 1	Sauget/Cahokia, Ill

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

DATE: 10/9/99

SAMPLERS C. Menzie & K Fogarty

Analyses Required

SAMPLE ID	Date	Time Comp.	Comp ~~Grab~~	Station Locations	No. of Containers	Notes 1 & 2					NOTES
CLAMBP-1	10/6/99	11:30	✓	Borrow Pit	3	✓					Treat as MS/MSD and duplicate
CLAMBP-2	10/7/99	9:30	✓	↓	1	✓					
CLAMBP-3	10/6/99	16:30	✓		1	✓					
CLAM Ref-1	10/8/99	9:30	✓	Prairie du Pont Creek	1	✓					
~~CLAM Ref-2 Comp 1~~	~~10/8/99~~	~~11:00~~	✓	~~Ref Borrow Pit~~	~~1~~	✓					
CLAM Ref-2 Comp 1	10/9/99	10:00	✓	Ref Borrow Pit	1	✓					

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Katherine A Fogarty	10/9/99	1500			
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Laboratory: Savannah Labs

Phone: (

Contact Person:

Remarks:
1) Samples ~~frozen~~ depurated overnight, then frozen.
2) Analysis = SVOCs, PCBs, pesticides, herbicides, dioxins, metals, cyanide

Serial Number 005783

P. 05/06 912 352 0165 STL SAVANNAH LABS 11:31 FEB-21-2000

STL Savannah Laboratories

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (850) 878-3994 Fax: (850) 878-6604
900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
6712 Benjamin Rd., Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049

PROJECT REFERENCE: Sauget Area I
PROJECT NO.: 648B
PROJECT LOCATION (STATE):
STL (LAB) PROJECT MANAGER: Betsy Beauchamp
P.O. NUMBER:
CONTRACT NO.:
CLIENT (SITE) PM: C. Menzie
CLIENT PHONE:
CLIENT FAX:
CLIENT NAME: Solutia / Menzie Cura
CLIENT EMAIL:
CLIENT ADDRESS: 1 Courthouse Ln, Suite 2 Chelmsford.
COMPANY CONTRACTING THIS WORK (if applicable):

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE / AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES: Tissue

PAGE ___ OF ___
STANDARD REPORT DELIVERY ○ DATE DUE ____
EXPEDITED REPORT DELIVERY (SURCHARGE) ○ DATE DUE ____
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE/GRAB	NUMBER OF CONTAINERS SUBMITTED (Tissue)	REMARKS
10/6/99	11:30	Clam BP-1 comp 01	Y	X	
10/6/99	11:30	Clam BP-1 comp 02	Y	X	Can use as Sample Dup & MS/MSD
10/6/99	11:30	Clam BP-1 comp 03	Y	X	
10/7/99	9:30	Clam BP-2 comp 01	Y	X	
10/6/99	16:30	Clam BP-3 comp 01	Y	X	split w/weston
10/8/99	9:30	Clam REF-1 comp 01	Y	X	
10/8/99	11:00	Clam REF2-2 comp 01	Y	X	
10/9/99	10:00	Clam REF 2-2 comp 02	Y	X	
10/5/99	14:20	SNCS-B Comp 1	Y	X	2 bottles
10/4/99	14:20	SNCS-C Comp 1	Y	X	
10/4/99	10:45	SNCS-D Comp 1	Y	X	split w/weston
10/9/99	16:00	SN REF 2-1 Comp 1	Y	X	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			[signature]	1/26/00	1700	[signature]	2/9/00	12:40
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
[signature]	1/26/00	1700	YES / NO		3916900	

ORIGINAL

P. 03/06 912 352 0165 STL SAVANNAH LABS 11:30 FEB-21-2000

Serial Number 005781

STL Savannah Laboratories

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

- 5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
- 2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (850) 878-3994 Fax: (850) 878-9504
- 900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
- 6712 Benjamin Rd., Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049

PROJECT REFERENCE: Sauget Area I
PROJECT NO.: 648
PROJECT LOCATION (STATE):
STL (LAB) PROJECT MANAGER: C Menzie
P.O. NUMBER:
CONTRACT NO.:
CLIENT (SITE) PM: Solutia
CLIENT PHONE:
CLIENT FAX:
CLIENT NAME: MCA
CLIENT EMAIL:
CLIENT ADDRESS: 1 Courthouse Lane Suite 2, Chelmsford
COMPANY CONTRACTING THIS WORK (if applicable):

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE; AQUEOUS (WATER); SOLID OR SEMISOLID; AIR; NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES: Tissue

PAGE ___ OF ___

STANDARD REPORT DELIVERY ○ DATE DUE ___
EXPEDITED REPORT DELIVERY (SURCHARGE) ○ DATE DUE ___
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE/GRAB	AQUEOUS	SOLID	AIR	NONAQUEOUS	Tissue (NUMBER OF CONTAINERS SUBMITTED)	REMARKS
11/1/99		LMB REF 1 Comp 1	X					X	
11/1/99		LMB REF 1 Comp 2	X					X	
10/8/99		LMB REF 2 Comp 1	X					X	
11/2/99		LMB REF 2 Comp 2	X					X	
10/5/99		F.F. CS-B Comp 1	X					X	eliminate Herb + pest
10/4/99		F.F. CS-D Comp 1	X					X	Split w/Weston
10/4/99		F.F. BP Comp 1	X					X	
10/6/99		F.F. BP Comp 2	X					X	
10/6/99		F.F. BP Comp 3	X					X	
10/6/99		Shrimp BP Comp	X					X	3 bottles
10/7/99		Shrimp REF 1 Comp	X					X	
10/8/99		Shrimp REF 2 Comp	X					X	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Joan Pinli	1/26/00	1700				[signature]	2/9/00	12:40
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
[signature]	1/26/00	17:00	YES		S916900	

ORIGINAL

3.29 Fish Collection for Tissue Analysis

3.29.1 Rationale/Design

Fish were sampled to determine concentrations of target analytes in the tissues of forage fish and game fish. These data will be used to support both the Ecological Risk Assessment and the Human Health Risk Assessment.

3.29.2 QA/QC Procedures

Field duplicates, MS/MSD samples, and samples split with USEPA representatives are listed on Table 3.29.4. Trip blanks are not necessary for tissue samples. The beach seines and gill nets were not considered a quantifiable source of cross-contamination and rinsing fish in deionized water after sampling further reduced the possibility of cross-contamination. This eliminated the need for an equipment rinsate blank from the beach seines. The deviation log describing this decision is in Section 3.28.4.1.

3.29.3 Field Procedures

Prior to beginning fieldwork, Preparatory Inspection Meetings were held that were attended by a representative of each of the interested parties (Section 3.26.4).

Fish were sampled using a variety of methods. In the creek sectors, beach seining was used exclusively. In the larger water bodies, a combination of minnow traps, catfish traps, gillnets, and beach seining (Photo 3.29.4.3.1) were used. The traps, baited with chicken liver, shiners, and commercial catfish bait, yielded very few fish. The gill nets and beach seines were the most useful for collecting fish. In very shallow water such as Creek Sector C-2, parts of the Borrow Pit, and parts of the reference locations, fish could be sampled by hand collection.

After collection, fish were washed by hand, sorted, and placed in an on-site freezer. At the end of the main sampling event, fish designated for analysis were sent to Savannah River Laboratory on dry ice. Fish designated for taxonomic identification only were sent to Menzie-Cura & Associates, Inc.

At the laboratory fish were kept frozen until filleting and analysis. Table 3.29.4 lists the resulting samples, locations, species, and sample types. White crappie was selected as a recreational species to be filleted. However, insufficient tissue mass was not available for the complete series of analyses, and white bass were filleted to provide tissue for herbicide and/or pesticide analyses (Table 3.29.4). The deviation log documenting this decision is in Section 3.29.4.1.

For forage fish, insufficient tissue was available for all analyses from Creek Sector CS-B and reference area 2). Therefore, it was decided not to analyze these two samples (FFCS-B COMP-01 and FFREF2 COMP-03) for herbicides. The deviation log documenting this decision is in Section 3.29.4.1.

3.29.4 Documentation

The deviation logs for the fish collection are in Section 3.29.4.1, photographs are in Section 3.29.4.2, and the chain-of-custody forms are in Section 3.29.4.3. For fish collection that occurred during the Main Sampling Event, the Daily Work Logs, Work Forecasts, and Safety Meeting are in Section 3.26.4.3 and the field notes are in Section 3.26.4.4.

Table 3.29.4
List of Sample Stations, Dates, and QA/QC Samples for Fish Tissue Analysis
Dead Creek, Borrow Pit and Reference Areas
Sauget Area I

Sample Type	Sample ID	Date	Location	Species	Sample Type	Tissue Type	No. in Composite	Total Wt (g)	Notes*
Crappie fillets	WCBP COMP-01	10/4/99	Borrow Pit	Crappie	Composite	Fillet	12	184.5	
	WCBP COMP-02	11/1/99	Borrow Pit	Crappie	Composite	Fillet	6	77.5	Use WBBP-Fillet-01 for herbicide analysis.
	WCBP COMP-03	11/1/99	Borrow Pit	Crappie	Composite	Fillet	5	64.6	Use WBBP-Fillet-02 for herbicide and pesticide analysis.
	WCREF1 COMP-01	10/4/99	Ref-01	Crappie	Composite	Fillet	8	248	
	WCREF1 COMP-02	11/1/99	Ref-01	Crappie	Composite	Fillet	7	188.2	
	WCREF2 COMP-01	11/2/99	Ref-02-2	Crappie	Composite	Fillet	4	293	
	WCREF2 COMP-02	11/2/99	Ref-02-2	Crappie	Composite	Fillet	5	523.3	Field duplicate/Split with Weston
White bass fillets*	WBBP Fillet-01	10/4/99	Borrow Pit	White Bass	Individual	Fillet	1	26.2	To be used for herbicides only.
	WBBP Fillet-02	10/4/99	Borrow Pit	White Bass	Individual	Fillet	1	114	To be used for herbicides and pesticides only.
Largemouth bass whole bodies	LMBBP COMP-01	10/4/99	Borrow Pit	Largemouth Bass	Composite	Whole Body	3	1467.8	MS/MSD Sample
	LMBBP COMP-02	11/3/99	Borrow Pit	Largemouth Bass	Composite	Whole Body	2	769.7	
	LMBBP COMP-03	11/1/99	Borrow Pit	Largemouth Bass	Composite	Whole Body	3	1004	Split with Weston
	LMBREF1 COMP-01	11/1/99	Ref-01	Largemouth Bass	Composite	Whole Body	3	1321.7	
	LMBREF1 COMP-02	11/1/99	Ref-01	Largemouth Bass	Composite	Whole Body	3	1027.3	
	LMBREF2 COMP-01	10/8/99	Ref-02-2	Largemouth Bass	Composite	Whole Body	3	922.3	
	LMBREF2 COMP-02	11/2/99	Ref-02-2	Largemouth Bass	Composite	Whole Body	3	1642.2	
Forage fish whole bodies	FFCS-B COMP-01	10/5/99	CS-B	*Lepomis*	Composite	Whole Body	91	62.8	
			CS-C						None present
	FFCS-D COMP-01	10/5/99	CS-D	*Lepomis*	Composite	Whole Body	225	217.2	Split with Weston
			CS-E						None present
			CS-F						None present
	FFBP COMP-01	10/4/99	Borrow Pit	*Lepomis*	Composite	Whole Body	14	115	
	FFBP COMP-02	10/6/99	Borrow Pit	*Lepomis*	Composite	Whole Body	151	96.1	
	FFBP COMP-03	10/6/99	Borrow Pit	*Lepomis*	Composite	Whole Body	157	92	
	FFREF1 COMP-01	10/8/99	Ref-01	*Lepomis*	Composite	Whole Body	3	120.8	
	FFREF2 COMP-01	10/8/99	Ref-02-2	Crappie	Composite	Whole Body	38	126.9	
	FFREF2 COMP-02	10/8/99	Ref-02-2	4 LMBass,1 minnow and 4 *Lepomis*	Composite	Whole Body	9	69.7	
	FFREF2 COMP-03	10/8/99	Ref-02-1	Minnow	Composite	Whole Body	278	78.6	
Bullheads whole bodies	BBBP COMP-01	11/1/99	Borrow Pit	Bullhead	Composite	Whole Body	9	513.7	Field duplicate
	BBBP COMP-02	11/1/99	Borrow Pit	Bullhead	Composite	Whole Body	3	352.2	
	BBBP COMP-03	10/7/99	Borrow Pit	Bullhead	Composite	Whole Body	4	227.4	
	BBREF1-2 COMP-01	10/8/99	Ref-01	Bullhead	Composite	Whole Body	3	148.8	
	BBREF1-2 COMP-02	10/8/99	Ref-01	Bullhead	Composite	Whole Body	4	259.6	
	BBREF2-2 COMP-01	11/2/99	Ref-02-2	Bullhead	Individual	Whole Body	1	509.2	MS/MSD sample

3.29.4.1 Deviation Logs

DEV-017

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION / COMPANY: C. Menzie/MCA DATE 2/18/00

HEALTH & SAFETY APPROVAL REQUIRED: YES: ______ NO: ✓

PROJECT NAME SAUGET AREA I PROJECT LOCATION Dead Creek

WEATHER ______ PRECIPITATION ______ TEMPERATURE ______

NUMBER OF HOURS WORKED ______ NUMBER OF EMPLOYEES ______

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT: TIME: MANPOWER: ETC.):
7. REMARKS:

1. Fish tissue analysis - fillets for human health RA
2. Sect 11. of SAP - Fish species used for fillet analysis to support human health
3. Insufficient tissue amount for white crappie fillets at two locations in Borrow Pit to complete all specified analyses
4. White bass tissue will be used at these two locations for analysis of herbicides and/or pesticides. Like the white crappie, this species is used by recreational fishing.
5. None special
6. None envisioned
7. None

Kimberly Perry / [signature] 3/29/00

PRINTED NAME / SIGNATURE OF PREPARER

Charles Menzie / [signature]

DATE 2/18/00

PRINTED NAME / SIGNATURE OF SOLUTIA REP / DATE

PRINTED NAME / SIGNATURE OF USEPA REP / DATE

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

DEV-017A

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION / COMPANY: C. Menzie / MCA DATE 2/18/00

HEALTH & SAFETY APPROVAL REQUIRED: YES: ______ NO: ✓

PROJECT NAME SAUGET AREA I PROJECT LOCATION Dead Creek

WEATHER ______ PRECIPITATION ______ TEMPERATURE ______

NUMBER OF HOURS WORKED ______ NUMBER OF EMPLOYEES ______

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT: TIME; MANPOWER: ETC.):
7. REMARKS:

1. Fish tissue analysis - forage fish
2. Section 11 of SAP - Chemical analytes
3. Insufficient tissue was obtained for all analyses at a few locations - CS-B, Ref 2-1
4. A prioritization scheme was implemented for analytes; herbicides not analyzed
5. None special
6. None envisioned
7. None

Charles Menzie / [signature]
PRINTED NAME / SIGNATURE OF PREPARER

2/18/00
DATE

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Kimberly Perry / [signature] / 3/29/00
PRINTED NAME / SIGNATURE OF SOLUTIA REP / DATE

PRINTED NAME / SIGNATURE OF USEPA REP / DATE

3.29.4.3 Photographs

Photo 3.29.4.3.1. Seining at Old Prairie DuPont Creek (November 1999).

3.29.4.3 Chain-of-Custody

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
648B	Dead Creek - Sauget Area I	Sauget/Cahokia, Ill

DATE: 10/9/99

SAMPLERS C. Menzie

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

Analyses Required

SAMPLE ID	Dates	~~Comp~~	~~Grab~~	Station Locations	No. of Containers						NOTES
Fish Bag 1	10/4 to 10/9/99			Borrow Pit Set 1	7						Hold
Fish Bag 2	10/4 to 10/9/99			Borrow Pit Set 2-24	7						Hold
Fish Bag 3	10/4 to 10/9/99			Ref Borrow Pit Ref 2-2	4						Hold
Fish Bag 4	10/4 to 10/9/99			Prairie du Pont Ref 1	~~4~~ 5						Hold
Fish Bag 5	10/4 to 10/9/99			Ref 1 & CS-C BB	2						Hold
Fish Bag 6	10/4/99 to 10/9/99			BP & Ref carp	3						Hold

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
[signature]	10/9/99	1500			
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Laboratory: Savannah

Phone:

Contact Person: Betsy Beauchamp

Remarks: Hold samples until ~~for~~ discussions with C. Menzie - Samples frozen on day of collection

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:	MENZIE-CURA & ASSOCIATES, INC.
648B	Dead Creek – Sauget Area F	Sauget/Cahokia, Ill.	1 COURTHOUSE LANE, SUITE 2 CHELMSFORD, MA 01824 TEL: 978/453-4300 FAX: 978/453-7260

DATE: 10/9/99

SAMPLERS C. Menzie, K. Fogarty

Analyses Required

SAMPLE ID	Date	~~Time~~ Comp.	Comp ~~Grab~~	Station Locations	No. of Containers	Notes 1 & 2					NOTES
Forage B	10/5/99	9:45	✓	Creek Section B	1						
D	10/6/99	0:45	✓	Creek Section D	1						
BP-1A	10/6/99	11:30	✓	Borrow Pit	1						151 sunfish
BP-1B	↓	↓	✓	↓	1						1 shad/50 minnows
BP-1C	↓	↓	✓	↓	1						6 shad/165 minnows
BP-1D	↓	↓	✓	↓	1						157 sunfish
Ref 2-1-A	10/8/99	1600	✓	Ref Creek	1						sunfish + shad
Ref 2-1B	"	"	✓	" "	1						minnows
Ref 2-2	10/8/99	1700	✓	Ref Borrow Pit	1						

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Katherine A. Fogarty	10/9/99	1400			

Laboratory: Savannah Labs

Phone:

Contact Person: Betsy Beauchamp

Remarks:
1. Frozen on day collected
2. Analyses = SVOCs, PCB, pesticides, herbicides, dioxin, metals, Cyanide

* Please hold samples mark with * and do not analyze

~~[illegible]~~

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: Sauget Area I

PROJECT LOC. (State): IL

SAMPLER(S) NAME: K. Fogarty

CLIENT NAME: Solutia - Monsanto

CLIENT ADDRESS (CITY, STATE, ZIP): 1 Courthouse Sq [illegible]

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION
11/1/99	14:00	2 LMB [illegible]
11/1/99	14:00	1 White [illegible]
11/1/99	14:00	±14 Crappie [illegible]
11/3/99	11:00	1 Yellow [illegible]
11/2/99	11:00	3 LMB [illegible]
11/3/99	11:00	±6 Crappie [illegible]
11/2/99	11:00	3 White [illegible]
11/1/99	11:00	2 LMB [illegible]
11/2/99	14:00	2 LMB [illegible]
11/3/99	9:50	1 LMB [illegible]
11/1/99	11:00	11 Crappie [illegible]
11/1/99	11:00	10 Brown [illegible]

RELINQUISHED BY: (SIGNATURE) Kathleen Fogarty

RECEIVED BY: (SIGNATURE)

EMPTY CONTAINERS

CLIENTS FIELD COPY

FEB-21-2000 11:31 STL SAVANNAH LABS 912 352 0165 P.04/06

Serial Number 005780

STL Savannah Laboratories

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (850) 878-3994 Fax: (850) 878-9504
900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
6712 Benjamin Rd., Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049

PROJECT REFERENCE: Sauget Area I
PROJECT NO.: 648 B
PROJECT LOCATION (STATE):
STL (LAB) PROJECT MANAGER: C. Menzie
P.O. NUMBER:
CONTRACT NO.:
CLIENT (SITE) PM: Solutia
CLIENT PHONE:
CLIENT FAX:
CLIENT NAME:
CLIENT EMAIL:
CLIENT ADDRESS: 1 Courthouse Lane, Chelmsford
COMPANY CONTRACTING THIS WORK (if applicable):

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE / AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES: X'154e

PAGE / OF

STANDARD REPORT DELIVERY ○ DATE DUE
EXPEDITED REPORT DELIVERY (SURCHARGE) ○ DATE DUE
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G)	NUMBER OF CONTAINERS SUBMITTED (X'154e)	REMARKS
10/4/99		WC BP Comp 1	X	X	
11/1/99		WC BP Comp 2	X	X	[illegible] run WB [illegible]
11/1/99		WC BP Comp 3	X	X	[illegible] run WB [illegible]
10/4/99		WC REF1 Comp 1	X	X	
11/1/99		WC REF1 Comp 2	X	X	
10/4-11/2-99		WC REF2 Comp 1	X	X	
11/2-99		WC REF2 Comp 2	X	X	SPLIT W/WESTON
10/4/99		LMB BP Comp 1	X	X	
11/3/99		LMB BP Comp 2	X	X	
11/1-11/2		LMB BP Comp 3	X	X	Split w/WESTON
10/8/99	9:30/[illegible]	SN REF1 Comp 1	X	✓	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Chas Menzie	1/25/00	12:00	[signature]	1/26/99	17:00	[signature]	2/9/00	12:40
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
[signature]	1/26/00	17:00	YES NO		S916900	

ORIGINAL

Serial Number 005781

STL Savannah Laboratories
A division of Severn Trent Laboratories, Inc.

5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (850) 878-3994 Fax: (850) 878-9504
900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
6712 Benjamin Rd., Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

ORIGINAL

PROJECT REFERENCE: Sauget Area I
PROJECT NO.: 648B
PROJECT LOCATION (STATE):
STL (LAB) PROJECT MANAGER: C Menzie
P.O. NUMBER:
CONTRACT NO.:
CLIENT (SITE) PM: Solutia
CLIENT PHONE:
CLIENT FAX:
CLIENT NAME: MCA
CLIENT EMAIL:
CLIENT ADDRESS: 1 Courthouse Lane Suite 2, Chelmsford
COMPANY CONTRACTING THIS WORK (if applicable):

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE / AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES: Tissue

PAGE ___ OF ___
STANDARD REPORT DELIVERY ○ DATE DUE ______
EXPEDITED REPORT DELIVERY (SURCHARGE) ○ DATE DUE ______
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	Composite (C) or Grab (G)	Aqueous (Water)	Solid or Semisolid	Air	Nonaqueous Liquid	Tissue (Number of containers submitted)	REMARKS
11/1/99		LMB REF 1 Comp 1	X					X	
11/1/99		LMB REF 1 Comp 2	X					X	
10/8/99		LMB Ref 2 Comp 1	X					X	
11/2/99		LMB Ref 2 Comp 2	X					X	
10/5/99		F.F. CS-B Comp 1	X					X	eliminate Herb + pest
10/4/99		F.F. CS-D Comp 1	X					X	Split w/Weston
10/4/99		F.F. BP Comp 1	X					X	
10/6/99		F.F. BP Comp 2	X					X	
10/6/99		F.F. BP Comp 3	X					X	
10/6/99		Shrimp BP Comp	X					X	3 bottles
10/7/99		Shrimp REF 1 Comp	X					X	
10/8/99		Shrimp REF 2 Comp	X					X	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Joan Pili	11/26/99	1700				[signature]	2/9/00	12:40
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
[signature]	11/26/99	1700	YES		S916900	

912 352 0165 P.02/06

Serial Number 005782

STL Savannah Laboratories

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Sent to Triangle

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2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (850) 878-3994 Fax: (850) 878-9504
900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 Fax: (334) 666-6696
6712 Benjamin Rd., Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 Fax: (813) 885-7049

PROJECT REFERENCE: Saucet Area I
PROJECT NO.: 648 B
PROJECT LOCATION (STATE):
STL (LAB) PROJECT MANAGER: C. Menzie
P.O. NUMBER:
CONTRACT NO.:
CLIENT (SITE) PM: Solutia
CLIENT PHONE:
CLIENT FAX:
CLIENT NAME: Menzie-Cura
CLIENT EMAIL:
CLIENT ADDRESS: 1 Courthouse Ln, Suite 2 Chelmsford
COMPANY CONTRACTING THIS WORK (if applicable):

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE / AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES: Tissue

PAGE ___ OF ___
STANDARD REPORT DELIVERY ○ DATE DUE ____
EXPEDITED REPORT DELIVERY (SURCHARGE) ○ DATE DUE ____
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

COPY

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX	NUMBER OF CONTAINERS SUBMITTED (Tissue)	REMARKS
10/8/99		FF REF 1 Comp 1	X	X	
10/8/99		FF REF 2 Comp 1	X	X	
11/1/99		BB - BP - Comp 1	X	X	Split w/Weston
10/9/99		BB - BP - Comp 2	X	X	
10/8/99		BB - ~~BP~~ REF 1-2 Comp 1	X	X	
10/8/99		BB REF 1-2 Comp 2	X	X	
11/2/99		BB REF 2-2 Comp 1	X	X	
10/4/99		WB BP Fillet 1		X	used only if needed for herbicides Herb
10/4/99		WB BP Fillet 2		X	use only if needed for herbicide +pe
10/8/99		FF REF 2 COMP 2	X	X	eliminate Herb + pest
10/8/99		FF REF 2 COMP 3	X	X	
10/7/99		BB - BP - Comp 3		X	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			[signature]	1/26/00	1700	[signature]	2-9-00	12:40

RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
[signature]	[illegible]	[illegible]	YES		S916900	

ORIGINAL

FEB-21-2000 11:30 STL SAVANNAH LABS

3.30 Vegetation Collection for Tissue Analysis

3.30.1 Rationale/Design

Aquatic plants were collected for analysis of chemicals in tissues. The analysis will be used to estimate exposure to animals, such as muskrat, that feed on plants. To minimize variability associated with differential uptake by plant species, the creeping buttercup (*Ranunculus reptans*) was selected as a representative plant based on its presence in most sample locations (Photo 3.30.4.3.1). *R. reptans* was not found in the Borrow Pit, Creek Sectors E-3 and F-2, Site M, Old Prairie du Pont Creek reference area 1, and reference area 2-2.

3.30.2 QA/QC Procedures

An additional plant sample was taken from reference area 2-1 to provide a field duplicate and MS/MSD sample. Trip blanks are not necessary for tissue samples. Vegetation samples were collected entirely by hand. This reduced the possibility of cross-contamination during sampling and rinsing vegetation samples in deionized water further reduced the possibility of cross-contamination. This eliminated the need for an equipment rinsate blank. The deviation log describing this decision is in Section 3.28.4.1. Plant samples from CS-B-3 were split with USEPA.

3.30.3 Field Procedures

Vegetation sampling consisted of carefully pulling an individual plant, with intact roots, from the substrate by hand, washing off visible soil and sediment (Photo 3.30.4.3.1), and bagging the entire plant. *R. reptans* is a long vine with very short roots. Therefore, the decision was made in the field to not separate stems and roots for analysis. The deviation log can be found in Section 3.30.4.1.

3.30.4 Documentation

Table 3.30.4 shows the locations where plants were sampled for tissue analysis. The deviation log for this task is in Section 3.30.4.1, photographs are in Section 3.30.4.2, and the chain-of-custody forms are in Section 3.30.4.3.

The Daily Work Logs, Work Forecasts, and Safety Meeting Forms for the Main Sampling Event are in Section 3.26.4.3 and the field notes are in Section 3.26.4.4.

Table 3.30.4
List of Sample Stations, Dates, and QA/QC Samples for Vegetation
Sauget Area I

Sample ID	Station	Date of Sample	Species	QA/QC Samples
PTISS B-1	Creek Sector B-1	10/5/99	*Ranunculus reptans*	
PTISS B-2	Creek Sector B-2	10/5/99	*Ranunculus reptans*	
PTISS B-3	Creek Sector B-3	10/5/99	*Ranunculus reptans*	Sample split with USEPA
	Site M		None present	
PTISS C-1	Creek Sector C-1	10/4/99	*Ranunculus reptans*	
PTISS C-2	Creek Sector C-2	10/4/99	*Ranunculus reptans*	
PTISS C-3	Creek Sector C-3	10/4/99	*Ranunculus reptans*	
PTISS D-1	Creek Sector D-1	10/4/99	*Ranunculus reptans*	
PTISS D-2	Creek Sector D-2	10/4/99	*Ranunculus reptans*	
PTISS D-3	Creek Sector D-3	10/4/99	*Ranunculus reptans*	
PTISS E-1	Creek Sector E-1	10/6/99	*Ranunculus reptans*	Field Duplicate
PTISS E-2	Creek Sector E-2	10/6/99	*Ranunculus reptans*	
	Creek Sector E-3		None present	
PTISS F-1	Creek Sector F-1	10/7/99	*Ranunculus reptans*	
	Creek Sector F-2		None present	
PTISS F-2	Creek Sector F-3	10/7/99	*Ranunculus reptans*	
	Borrow Pit 1		None present	
	Borrow Pit 2		None present	
	Borrow Pit 3		None present	
	Reference Area 1-1 (Old Prarie DuPont Creek)	10/8/99	Cocklebur - not analyzed	
PTISS PDC2	Reference Area 1-2 (Old Prarie DuPont Creek)	10/8/99	*Ranunculus reptans*	
PTISS Ref2-1	Reference Area 2-1 (Long Slash Creek)	10/8/99	*Ranunculus reptans*	Field Duplicate and MS/MSD
	Reference Area 2-2		None present	

3.30.4.1 Deviation Logs

DEVIATION LOG

INDIVIDUAL REQUESTING DEVIATION / COMPANY: C. Menzie / Menzie-Cura DATE 10/4/99

HEALTH & SAFETY APPROVAL REQUIRED: YES: ________ NO: ✓

PROJECT NAME Solutia Area I PROJECT LOCATION Dead Creek

WEATHER cloudy - sunny PRECIPITATION none TEMPERATURE 50-70 °F

NUMBER OF HOURS WORKED 8 NUMBER OF EMPLOYEES 7

1. CONTRACT ITEM BEING WORKED ON:
2. ITEM BEING DEVIATED (REF. APPROP. SEC. OF FSP/HASP):
3. REASON FOR DEVIATION:
4. DEVIATION OR FIELD CHANGE TO BE IMPLEMENTED:
5. EQUIPMENT:
6. DEVELOPMENTS WHICH MIGHT LEAD TO ISSUANCES OF A CHANGE ORDER OR BE THE BASIS OF A CLAIM (EQUIPMENT: TIME: MANPOWER: ETC.):
7. REMARKS:

1. Ecological sampling: plant tissue

2. plant tissue analyses section 4-6 of Ecological Sampling QAPP

3. The common plant selected for analysis is a vine with short roots. We decided to combine the stem, leaves, roots into a single sample

4. Collect whole plant samples (stems, leaves, roots combined) rather than separating roots from stems/leaves

5. trowel

6. none

7. This modification was discussed with Steve Brodman of Weston prior to implementation

PRINTED NAME / SIGNATURE OF PREPARER

Kimberly Perry / [signature] 10/4/99

PRINTED NAME / SIGNATURE OF SOLUTIA REP / DATE

DATE

PRINTED NAME / SIGNATURE OF USEPA REP / DATE

IF ADDITIONAL SPACE IS REQUIRED, RECORD ON REVERSE SIDE

Given to Weston 10/4/99 20:45 ~~hr~~

3.30.4.3 Photographs

Photo 3.30.4.3.1. *Ranunculus reptans* sample, covered with Duckweed, being washed (October 1999).

3.30.4.3 Chain-of-Custody

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:	MENZIE-CURA & ASSOCIATES, INC.
648B	Dead Creek	Sauget/Cahokia, Ill.	1 COURTHOUSE LANE, SUITE 2 CHELMSFORD, MA 01824 TEL: 978/453-4300 FAX: 978/453-7260

DATE: 10/9/99

SAMPLERS C. Menzie, K. Fogarty

SAMPLE ID	Date	Time Comp.	Comp Grab	Station Locations	No. of Containers	See Notes 1 & 2					NOTES
PTISS B-1	10/5/99	9:45	✓	Dead Creek Section B	2	✓					
PTISS B-2	↓	14:10	✓	↓	2	✓					
PTISS B-3	↓	9:00	✓	↓	3	✓					Split with EPA
PTISS C-1	10/4/99	16:15	✓	Dead Creek Section C	2	✓					
PTISS C-2		15:30	✓	↓	2	✓					
PTISS C-3		14:20	✓	↓	2	✓					
PTISS D-1		10:45	✓	Dead Creek Section D	2	✓					
PTISS D-2		12:10	✓	↓	2	✓					
PTISS D-3	↓	13:55	✓	↓	2	✓					
PTISS E-1	10/6/99	9:50	✓	Dead Creek Section E	2	✓					~~dupe~~ Treat as field duplicate
PTISS E-2	" "	9:05	✓	" "	2	✓					
PTISS F-1	10/7/99	15:00		Dead Creek Section F	2	✓					
PTISS F-3	" "	10:45	✓	" "	2	✓					
PTISS PDC-2	10/8/99	11:20	✓	Prairie du Pont Ref Area 2	1	✓					
PTISS Ref-1	10/8/99	16:30	✓	Reference Creek	~~3~~ 4	✓					MS/MSD ~~and treat as~~ field du

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Catherine A Fogarty	10/9/99	1440			

Laboratory: Savannah

Phone:

Contact Person: Betsy Beauchamp

Remarks:
Note 1. Samples frozen on day of collection.
(2) Analyses = SVOCs, Herbicides, Pesticides, PCBs, dioxins, Metals, cyani
(3) Homogenize samples then split w/ EPA

Ready to go

Section 4

4. Field Operations Documentation

The field sampling team maintained a set of field notebooks. Forms that were used include chain-of custody, test boring log, rock classification worksheet, initial equipment calibration log, project change order, deviation log, preparatory inspection meeting, clarification log, and ground water sampling log. The appendices contain these forms.

The field notebooks contain tabulated results of field measurements and documentation of field instrument calibration activities. The field notebooks also record the following:

- personnel conducting the site activities, their arrival and departure times, and their destination at the site
- incidents and unusual activities that occur on the site such as, but not limited to, accidents, breaches of security, injuries, equipment failures, and weather-related problems
- changes to the FSP and the HASP
- daily information such as:
  - work accomplished and the current site status
  - equipment calibrations, repairs, and results
  - site work zones.

In the field sampler's individual bound field notebook, samplers noted, with permanent ink, meteorological data, equipment employed for sample collection, calculations, information regarding collection of QA/QC samples, and any observations. Entries were dated, and any entry which was to be deleted had a single cross-out which was signed and dated. The following sampling-related information was recorded in the field notebook by the field sampling team:

- project name and number
- sample number
- sampling location
- required analysis
- date and time of sample collection
- type and matrix of sample
- sampling technique
- preservative used, if applicable
- sampling conditions

- observations
- initials of the sampler.

Field data documentation procedures were minimal in scope. Only direct reading instrumentation was employed in the field. The use of pH, conductivity, and turbidity meters; a PID; a real-time aerosol monitor (RAM); and thermometers generated some measurements directly read from the meters following calibration by the respective manufacturer's recommendations. Such data was written into field notebooks or on the appropriate activity log immediately after measurements were taken. If errors were made, results were legibly crossed out, initialed, and dated by the field member and corrected in a space adjacent to the original entry. Later, when the results forms were filled out, the O'Brien & Gere field leader proofed the forms to assess whether transcription errors had been made.

Photographic records were developed through the use of digital photographs showing slug test borings, bedrock corings, waste sampling, and test trenches.

4.1. Sample Documentation

4.1.1. Sample Identification System

Examples of the sample identification system are shown below:

- Soil gas survey data: SG-G-1 where "SG" denotes soil gas survey, "G" (H, I, L, N) is the site designation, and "1" denotes a sequential sample number for the grid cell samples and SGHNE-100, where "SG" denotes soil gas survey, "H" is the site designation, "NE" is the transect direction, and "100" is the foot spacing for the additional transect locations.

- Waste samples: WASTE-G-B1-12-14FT, where "WASTE" denotes a waste sample, "G" is the site designation, "B1" denotes the boring number, and "12-14FT" denotes sample depth. For composite samples, the sample depths were replaced with COMP.

- Fill area ground water samples: EE-02, where EE-02 denotes an existing well name or former location. A "GP" extension denotes a Geoprobe™ sampling tool was used to collect the sample.

- Upgradient ground water samples: UGGW-EE-20-100FT, where "UGGW" denotes an upgradient ground water sample, "EE-20" denotes a monitoring well ID, and "100FT" denotes sample depth. FT may be feet and a final extension of "sub" or "replace" where "sub" denotes a substitute sample location and "replace" denotes a replacement sample. "EB, MS, MSD, FD, and DUP" are possible extensions (see explanation below).

- Alluvial aquifer samples: AA-I-S1-(24-28)FT or AA-H-S1-(24-28)FT where "AA" denotes an alluvial aquifer sample, "I" or "H" is the site designation, "S1" is the numbered sampling station, and (24-28)FT is the sample depth. Feet may also be "ft" and may not have "( )". "EB, MS, MSD, FD, and DUP" are possible extensions (see explanation below). Site I numbered sampling station is S4.

- Downgradient alluvial aquifer samples: AA-I-S1-24-28ft, AA-GHL-S1-24-28ft, or AA-SW-S1-24-28ft where "AA" denotes an alluvial aquifer sample; I, GHL, or SW denotes Site I, west of GHL, and southwest of GHL, respectively; "S1" is the sequentially numbered sampling station; and "24-28ft" is the sample depth, may also be "24-28FT" or "(24-28)FT". EB, FD, MS, MSD, and DUP are possible extensions (see explanation below). Site I numbered sampling stations did not exceed S3.

- Bedrock ground water samples: Deviation submitted for using BR-G where "BR" denotes a bedrock ground water sample and "G" denotes site designation (Section 3.10.4.1). "EB, MS, MSD, and FD" are possible extensions (see explanation below).

- Shallow residential ground water samples: SGW-S1-15FT where "SGW" denotes a shallow ground water sample, "S1" is the sequentially numbered sampling location, and "15FT" indicates sample depth. "MS, MSD, and DUP" are possible extensions (see explanation below).

- Time series ground water samples: TS-S1-12HR where "TS" denotes a time series sample, "S1" is the sequentially numbered sampling location, and "12HR" indicates sample time. "MS, MSD, and FD" are possible extensions (see explanation below).

- Domestic well samples: DW-ABCD-1 where "DW" denotes a domestic well sample, "ABCD" denotes the first four letters of the well owner's last name, and "1" denotes a sequential sample number. "MS, MSD, and DUP" are possible extensions (see explanation below).

- Undeveloped area soil samples: UAS-T1-S1-0.5FT where "UAS" denotes an undeveloped area soil sample, "T1" is the transect number, "S1" is the sequentially numbered sampling location, and "0.5FT" or "0.5ft" indicates sample depth. "EB, FD, and MS/MSD" are possible extensions (see explanation below).

- Developed area soil samples: DAS-T1-S1-0-0.5FT where "DAS" denotes a developed area soil sample, "T1" is the transect number, "S1" is the sequentially numbered sampling location, and "0-0.5FT" indicates sample depth. "EB, FD, and MS/MSD" are possible extensions (see explanation below).

- Background soil samples: BS-EE20-3-6FT where "BS" denotes a background soil sample, "EE20" is the well location adjacent to the soil sample, and "3-6FT" indicates sample depth. "EB, MS/MSD, FD, and SUB" are possible extensions (see explanation below).

- Old Prairie duPont Creek sediment samples: BSSED-PDC-DS-S-0-54" where "BSSED" denotes a broad-scan sediment sample, "PDC" denotes Old Prairie duPont Creek, "DS" denotes downstream, "S" denotes south sampling location, and "0-54" indicates sample depth. May also use "US" to denote upstream and "IN" to denote inches. "EB, FD, and MS/MSD" are possible extensions (see explanation below).

- Developed/undeveloped area sediment samples: FASED-CSA-S1W-0-11" where "FASED" denotes a focused analysis sediment sample, "CSA" designates a Dead Creek sector, "S1W" is the sequentially numbered sampling location and compass direction for the side of the creek, and "0-11" denotes sample depth. Inches may be denoted as "IN". Other compass directions are E, W, and S. "BPL" denotes Borrow Pit Lake. "FASED" was left off Ids for CSC-S1-S5 and S12. "EB, FD, and MS/MSD are possible extensions (see explanation below).

- Borrow Pit Lake ecological sediment samples: "BPLESED-S1-0.2FT where "BPLESED" denotes an ecological sediment sample from Borrow Pit Lake, "S1" is the sequentially numbered sampling location, and "0.2FT" denotes sample depth. May not have a depth designator. "FD and MS/MSD" are possible extensions (see explanation below).

- Dead Creek/ecological sediment samples: SED-CSA-S1 where "SED" denotes a sediment sample, "CSA" designates the Dead Creek sector, and "S1" is the sequentially numbered sampling location. May have "0.2FT", which indicates sample depth. RA-1,RA-2 denotes Reference Areas 1 and 2, respectively. "EB, FD, and MS/MSD" are possible extensions (see explanation below).

- Surface water samples: SW-CSA-S1, SW-BPL-S, or SW-RA1-S1 where "SW" denotes a surface water sample; "CSA", "BPL" or "RA1" designate Dead Creek sector, Borrow Pit Lake, or Reference Area number, respectively; "M" denotes Site M; PDC denotes Prairie duPont Creek; and "S1" is the sequentially numbered sampling location. "US" and "DS" denote upstream and downstream, respectively. "EB, MS, MSD, and FD" are possible extensions (see explanation below).

- Air samples: AIR-V-1, AIR-S-1, AIR-M-1, AIR-P-1, or AIR-D-1 where "AIR" denotes an air sample; "V", "S", "M", "P", or "D" designate a VOC, SVOC, metals, PCB, or dioxin sample, respectively; and "1" denotes a sequential sample number. An "FB" extension denotes a field blank.

- Grain-size analysis: SITE G 14'to18', Site "L" 12-16feet, ST-N-D-18-22' where SITE G, Site "L", and ST-N denote site Ids; "D" denotes the deep boring; and 14'-18', 12-16feet, and 18-22' denote sample depth.

- Waste profiling: WI-COMP, where "WI" denotes a waste sample collected from Site I and "COMP" denotes a composite sample.

- Pilot test treatability samples: Leach2-Site I, where "Leach2" denotes leachate sample 2 for testing, "Site I" denotes site from which sample was collected.

Extensions: "MS" denotes a matrix spike, "MSD" denotes a matrix spike duplicate, "MS/MSD" denotes a matrix spike/matrix spike duplicate for soil or sediment samples, "FD" denotes a field duplicate sample, "DUP" denotes a duplicate sample, "FB" denotes a field blank, and "EB" denotes an equipment blank.

4.1.2. Sample Labels

For proper identification in the field and proper tracking by the analytical laboratory, samples were labeled in a clear and consistent fashion. Sample labels were waterproof or sample containers were sealed in plastic bags. Field personnel maintained a sampling log sheet containing information sufficient to allow reconstruction of the sample collection and handling procedures at a later time.

A completed sample label was attached to each investigative or QC sample. The following was recorded with permanent ink on labels by the field sampling team:

- project name and number
- sample number identification
- initials of sampler
- sampling location (if not already encoded in the sample number)
- required analysis
- date and time of sample collection
- space for laboratory sample number (only on the sample tag)
- preservative used, if applicable.

4.1.3. Chain-of-Custody Records

Chain-of-custody procedures were instituted and followed throughout the sampling activities. Samples are physical evidence and were handled according to strict chain-of-custody protocols. The field sampler was personally responsible for the care and custody of the sample until transferred. For proper identification in the field and proper tracking by the analytical laboratory, samples were labeled in a clear and consistent fashion.

The following information was recorded on the chain-of-custody by the field sampling team:

- project name and number
- sample description/location
- required analysis
- date and time of sample collection
- type and matrix of sample
- number of sample containers
- analysis requested/comments
- sampler signature/date/time
- airbill number.

The laboratory assigned a number for each sample upon receipt. That sample number was placed on the sample label. The label will be attached to the sample container.

A chain-of-custody document providing all information, signatures, dates, and other information, as required on the example chain-of-custody form in the 1999 FSP Appendix A, was completed by the field sampler and provided for each sample cooler. When transferring the possession of samples, the individuals relinquishing and receiving signed, dated, and noted the time on the chain of custody. The field sampler signed the chain-of-custody form when relinquishing custody, made a copy to keep with the field file, a copy for Solutia, a copy for O'Brien & Gere Laboratories, and included the original form in an airtight plastic bag in the sample cooler with the associated samples.

4.2. Field Analytical Records

Field analytical records for the Support Sampling Project consisted of gas chromatograms from the field GC used in the soil gas survey and field notebook entries for field instruments. Chromatograms are included in Section 3.2.4.3. In addition to information printed on the chromatograms, field notes were added as appropriate. Information detailed on each chromatogram included:

- sample number identification
- initials of sampler
- sampling location (if not already encoded in the sample number)
- required analysis
- date and time of sample collection
- date and time of analysis
- instrument name
- column and detector type
- carrier gas and flow rate
- backflush time
- injection volume
- gain setting

Only direct reading instrumentation was employed in the field. The use of pH, conductivity, and turbidity meters, a PID, a RAM, and thermometers generated some measurements directly read from the meters following calibration according to the respective manufacturer's recommendations. Such data was written into field notebooks or field sampling logs immediately after measurements were taken. Calibration records were recorded on the Initial Equipment Calibration Log and, if recalibration was required during the day, in the field notebooks.

4.3. Data Management and Retention

The field data and documentation as described in this section is part of the final evidence file. The final evidence file is the central repository for all documents which constitute evidence relevant to sampling and analysis activities as described in the FSP and the QAPP.

The final file consists of the following:

- laboratory data packages, including summary and raw data from the analysis of environmental and QC samples, chromatograms, mass spectra, calibration data, worksheets, and sample preparation notebooks

- chain-of-custody records

- data validation reports.

The following documentation supplements the chain-of-custody records:

- field notebooks and data
- field collection report
- photographs and drawings
- progress and QA reports
- contractor and subcontractor reports
- correspondence.

The evidence file must be maintained in a secured, limited-access area until all submittals for the project have been reviewed and approved and for a minimum of six years past the submittal date of the final report.

Section 5

5. Personal Protective Equipment

Personal protective equipment (PPE) requirements for each level of protection for O'Brien & Gere personnel are described in the HASP prepared for these field activities.

5.1. Protective Equipment Selection

Initial levels of PPE were as shown in the following table.

Activity	Level B	Level C	Modified Level D	Level D
Trenching		Observation		
Soil gas sampling		Initial		
Magnetometer survey			Initial	
Installation of soil borings and collection of cuttings		Initial		
Ground water sampling at existing wells		Initial		
Installation and sampling of ground water wells		Initial		
Domestic water sampling				Initial
Surface and subsurface soil sampling		Area G	Initial	
Surface water and sediment sampling			Initial	
Air sampling				Initial

Section 6

6. Sample Packaging and Shipping

A completed sample label was attached to each investigative or QC sample and the sample placed in a shipping container. Information to be recorded on sample labels is described in Section 4.1.2. Information to be recorded on chain-of-custody forms is described in Section 4.1.3. The sample identification system used in the field is described in Section 4.1.1.

Sampling containers were packed in bubble wrap sheets or bubble wrap bags and put in plastic bags to help prevent breakage and cross-contamination. Samples were shipped in coolers, each containing a chain-of-custody form, ice, and ice packs to maintain inside temperature at approximately 4°C. Sample coolers were sealed between the lid and sides of the cooler with a custody seal prior to shipment. The custody seal was an adhesive-backed tape that easily rips if it is disturbed. Samples were shipped to the laboratory by common overnight carrier. The field sampling team sent sample coolers to Savannah Labs. For samples collected for dioxin and dibenzofuran analysis, samples were sent to Triangle Labs. Samples were not sent to another laboratory without the permission of USEPA Region V. Sample transportation complied with U.S. Department of Transportation and ICAO/IATA (1999) regulations. Special sampling packing provisions were made for samples requiring additional protection and for samples to Thompson Engineering for soil physical analysis.

Samples remained in the custody of the sampler until transfer of custody was completed. Transfer consisted of:

- delivery of samples to the laboratory sample custodian
- signature of the laboratory sample custodian on the chain-of-custody document as receiving the samples and signature of sampler as relinquishing the samples.

When a carrier was used to take samples between the sampler and the laboratory, a copy of the airbill was attached to the chain-of-custody to maintain proof of custody.

Section 7

7. Investigation-Derived Wastes

Sampling activities occurred in widely separated locations. Therefore, personnel and equipment decontamination was accomplished at each sampling area using temporary facilities. Chapter 8 of the HASP described personnel and monitoring equipment decontamination procedures and supplies. PPE, disposal sampling equipment, cuttings, purge waters, and field decontamination wastes were collected at the point of generation and stored in temporary containers. PPE, solids, and liquids were consolidated in separate bulk containers at a central area. The sampling procedures were developed to minimize the quantity of waste generated. Additional activity-specific information on disposal of IDW was contained in Chapter 3 of this FSR. Waste tracking logs are included in Appendix E.

Section 8

8. Field Assessment/Inspection

The performance audit was an independent check to evaluate the quality of data being generated. The system audit was an on-site review and evaluation of the QC practices, sampling procedures, and documentation procedures.

At the discretion of the O'Brien & Gere project manager, performance and system audits of field activities were conducted to verify that sampling and analyses were performed in accordance with the procedures established in the FSP and the QAPP. The audits of field activities included two independent parts: internal and external audits.

The internal audits were performed by the O'Brien & Gere Quality Assurance Officer (QAO). The external audits were performed by USEPA Region V.

8.1. Field Performance and System Audits

8.1.1. Internal Field Audits

Internal Field Audit Responsibilities – Internal audits of field activities including sampling and field measurements were conducted by the O'Brien & Gere QAO.

Internal Field Audit Frequency – These audits verified that all established procedures were followed. Internal field audits were conducted at least once at the beginning of the site sample collection activities and annually thereafter.

Internal Field Audit Procedures – The audits included examination of field sampling records, field instrumentation operating records, sample collection, handling and packaging in compliance with the established procedures, maintenance of QA procedures, chain of custody, and other elements of the field program. Follow-up audits were conducted as necessary to correct deficiencies and to verify that QA procedures are maintained throughout the project. The audits involved review of field measurement records, instrumentation calibration records, and sample documentation. The areas of concern in a field audit included:

- sampling procedures
- decontamination of sampling equipment, if applicable
- chain-of-custody procedures

- standard operating procedures
- proper documentation in field notebooks
- subcontractor procedures.

8.1.2. External Field Audits

External Field Audit Responsibilities – External field audits were conducted by USEPA Region V.

External Field Audit Frequency – External field audits were conducted at any time during the field operations. These audits may or may not have been announced and were at the discretion of USEPA Region V.

Overview of the External Field Audit Process – External field audits were conducted according to the field activity information presented in the FSP and the QAPP.

Section 9

9. Corrective Action

Corrective action is the process of identifying, recommending, approving, and implementing measures to counter unacceptable procedures or out-of-control performance which can affect data quality. Corrective action can occur during field activities, laboratory analyses, data validation, and data assessment. Corrective action was only implemented after approval by the O'Brien & Gere project manager or the O'Brien & Gere field leader. If immediate corrective action was required, approvals secured by telephone from the project manager were documented in an additional memorandum.

For noncompliance problems, a formal corrective action program was developed and implemented at the time the problem was identified. The person who identified the problem was responsible for notifying the O'Brien & Gere project manager, who in turn notified the USEPA Region V. Implementation of corrective action was confirmed in writing through the same channel.

9.1. Field Corrective Action

Corrective action in the field can be needed when the sample network is changed (i.e., more or less samples, sampling location changes, and related modifications) or sampling procedures and/or field analytical procedures require modification due to unexpected conditions. Technical staff and project personnel were responsible for reporting all suspected technical or QA nonconformances or suspected deficiencies of any activity or issued document by reporting the situation to the O'Brien & Gere field leader. The O'Brien & Gere field leader was responsible for assessing the suspected problems in consultation with the O'Brien & Gere project manager on making a decision based on the potential for the situation to impact the quality of the data. If it was decided the situation requires corrective action, the O'Brien & Gere project manager notified the Solutia remedial project manager.

If appropriate, the O'Brien & Gere field leader verified no additional work dependent on the activity of concern was performed until the corrective actions were completed. Corrective action for field measurements included:

- Repeat the measurement to check the error.

- Check for proper adjustments for ambient conditions such as temperature.
- Check the batteries.
- Recalibrate.
- Check the calibration.
- Replace the instrument or measurement devices.
- Stop work (if necessary).

The O'Brien & Gere field leader was responsible for site activities. In this role, the O'Brien & Gere field leader at times was required to adjust the site programs to accommodate site-specific needs. When it became necessary to modify a program, the responsible person notified the O'Brien & Gere field leader of the anticipated change and implemented the necessary changes after obtaining the approval of the O'Brien & Gere field leader. The change in the program was documented on either a deviation log, clarification log, preparatory inspection meeting form, daily work log, and/or change orders, as appropriate, and signed by the O'Brien & Gere field leader (or designee) and Solutia remedial project manager (or designee). The O'Brien & Gere field leader (or designee) and Solutia remedial project manager (or designee) approved the change in writing or verbally prior to field implementation, if feasible.

The O'Brien & Gere field leader was responsible for controlling, tracking, and implementing identified changes. Reports on changes were distributed to affected parties, which includes USEPA Region V.

Corrective actions were implemented and documented in the field notebook. No staff member initiated corrective action without prior communication of findings through the proper channels.

The O'Brien & Gere QAO and laboratory QAO may identify the need for corrective action during either the data validation or data assessment. Potential types of corrective action may include resampling by the field team or reinjection or reanalysis of samples by the laboratory. These actions are dependent upon the ability to mobilize the field team or whether the data to be collected is necessary to meet the required QA objectives. When the O'Brien & Gere QAO or laboratory QAO identifies a corrective action situation, it is the O'Brien & Gere project manager who will be responsible for approving the implementation of corrective action, including resampling, during data assessment. Corrective actions of this type will be documented by the O'Brien & Gere QAO and the laboratory QAO.